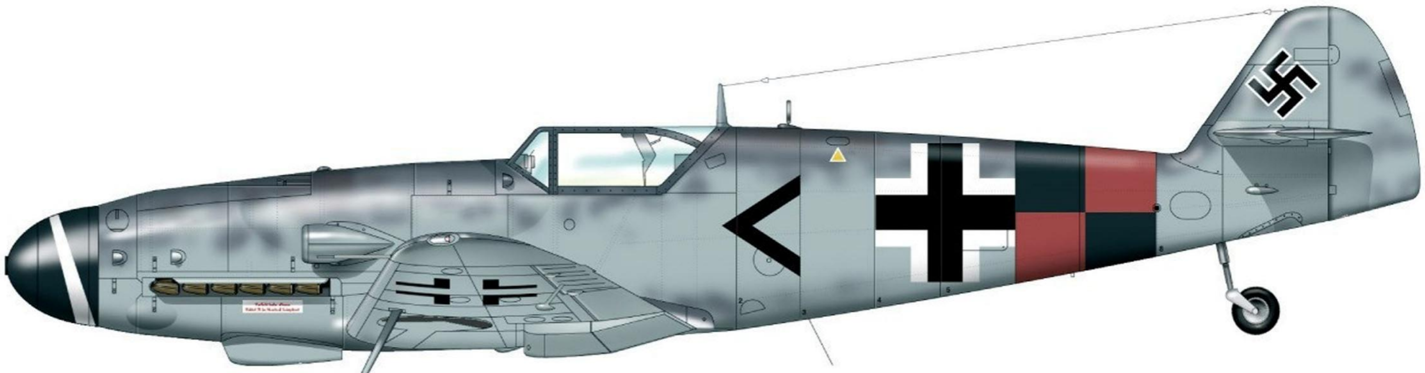
Messerschmitt Bf109G-10, flown by the Gruppe Adjutant of Stab I./KG(J)6, Prague-Kbely, Spring 1945. RLM 74/75/76 finish with black/white spinner and black rank making on fuselage sides; red/black 'home defence' bands around the rear fuselage. White only cross above wings, black only underneath



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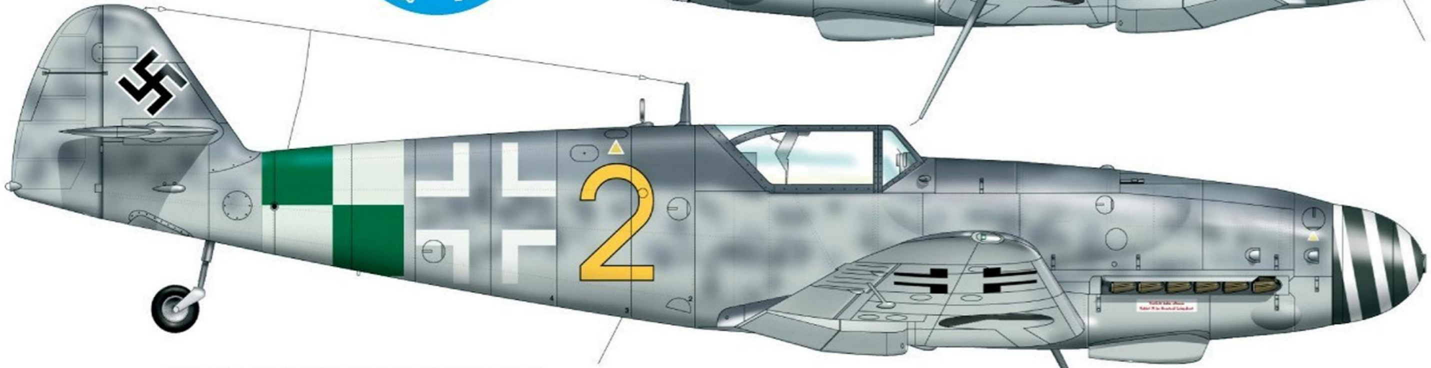
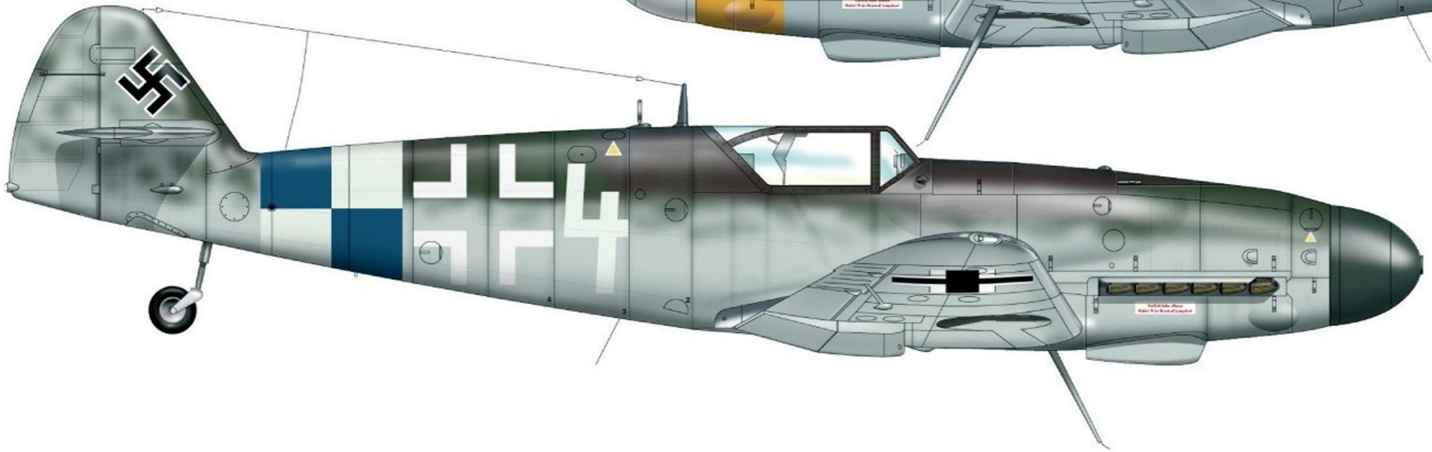


Messerschmitt Bf 109G-10, 'Yellow 2', KG(J)27, 1945. RLM 74/75/76 finish with RLM 70 spinner decorated with a white spiral; RLM 04 '2' on fuselage sides, outlined in black; Hellgrün RLM 25/white rear fuselage bandse

Messerschmitt Bf 109G-10, W/Nr.15153, 'Blue 22', II./JG52, spring 1945. RLM 81/83/76 finish with yellow nose and rudder; black/white spinner; RLM 24 '22' and horizontal bar, outlined in white; black serial on rudder

Messerschmitt Bf 190G-10, 'White 4', KG(J)54, 1945. RLM 80/81/76 finish with RLM 24 Hellblau/white rear fuselage checks; white '4' on fuselage sides

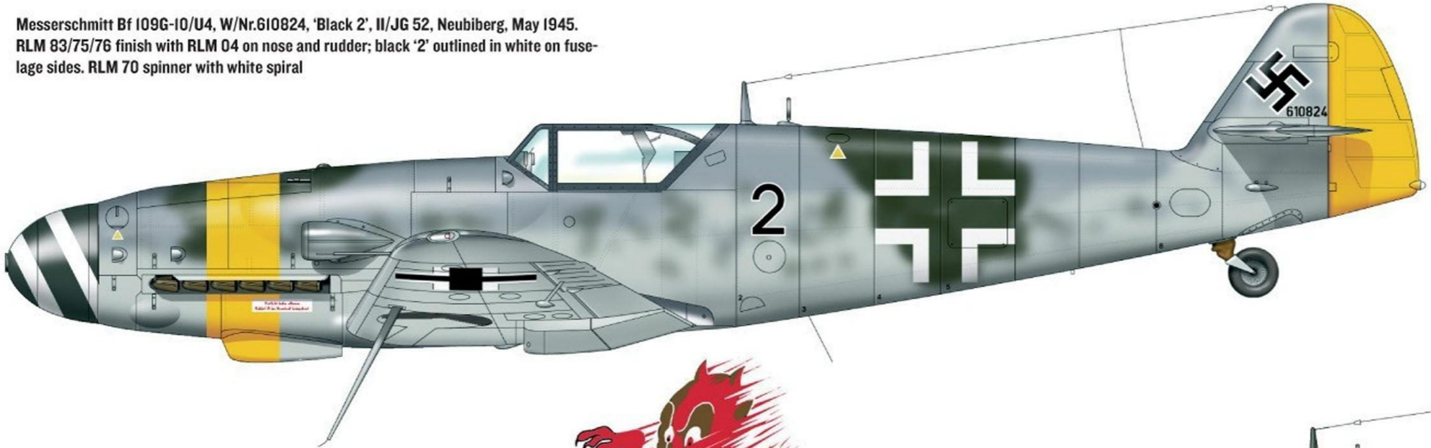


PROFILES 1:48 Scale

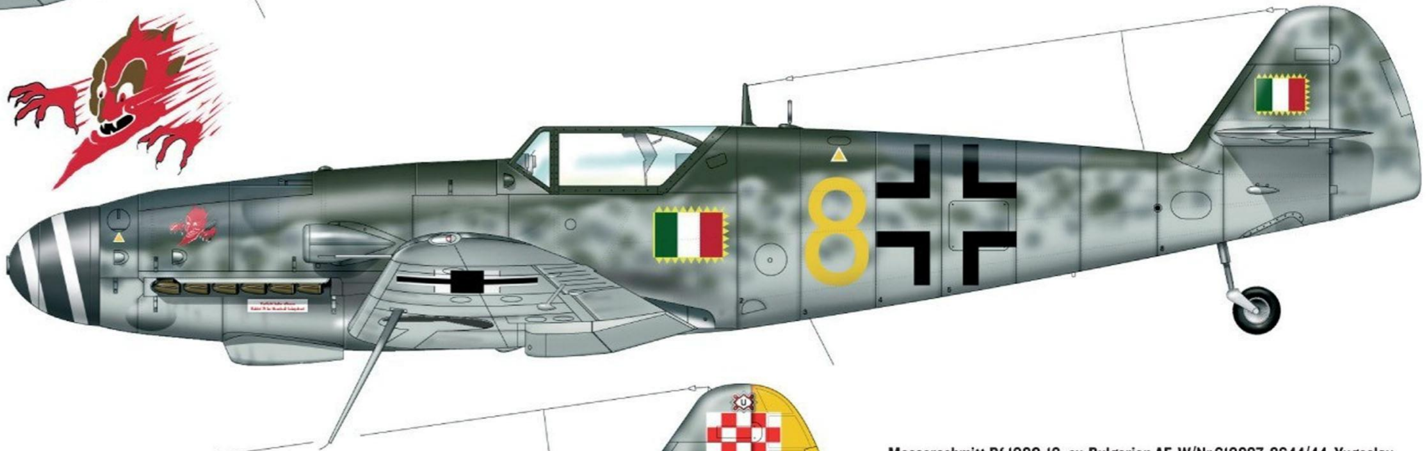
0 metres 1 2

0 feet 3 6

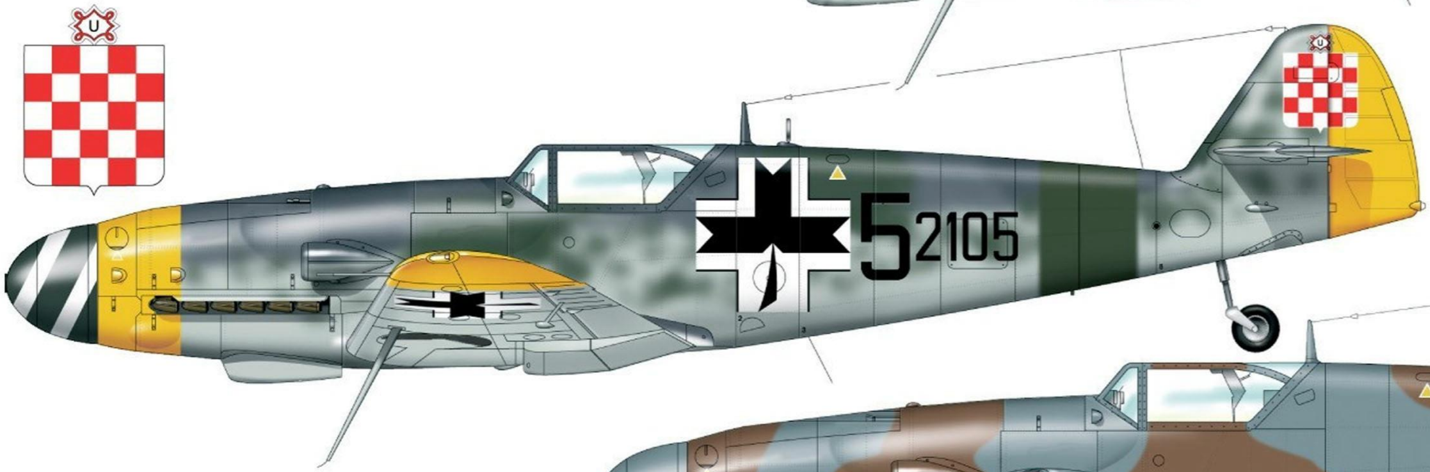
Messerschmitt Bf 109G-10/U4, W/Nr.610824, 'Black 2', II/JG 52, Neubiberg, May 1945. RLM 83/75/76 finish with RLM 04 on nose and rudder; black '2' outlined in white on fuselage sides. RLM 70 spinner with white spiral



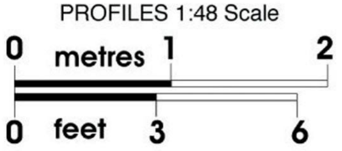
Messerschmitt Bf 109G-10/AS, 'Yellow 8', flown by Maresciallo Attilio Sanson, 5a Squadriglia IIo Gruppo Caccia, Aviazione Nazionale Repubblicana, Osoppo, March 1945. RLM 74/75/76 finish with black/white spinner; standard German markings in usual positions. Yellow '8' on fuselage sides; Italian flags, fringed in yellow, on fuselage sides and fin. 'Diavolo Rosso' emblem on nose (both sides)



Messerschmitt Bf 109G-10, 5-2105, 2. Lovacko Jato, 1. Zrakoplovna skupina, Zagreb-Lucko, spring 1945. RLM 74/75 upper surfaces with what appears to be RLM 80 mottling and retouching in various areas; RLM 76 undersides. Yellow nose, rudder and wingtips; RLM 70 spinner with white spiral. National markings in six positions, chequered flag on vertical tail surfaces

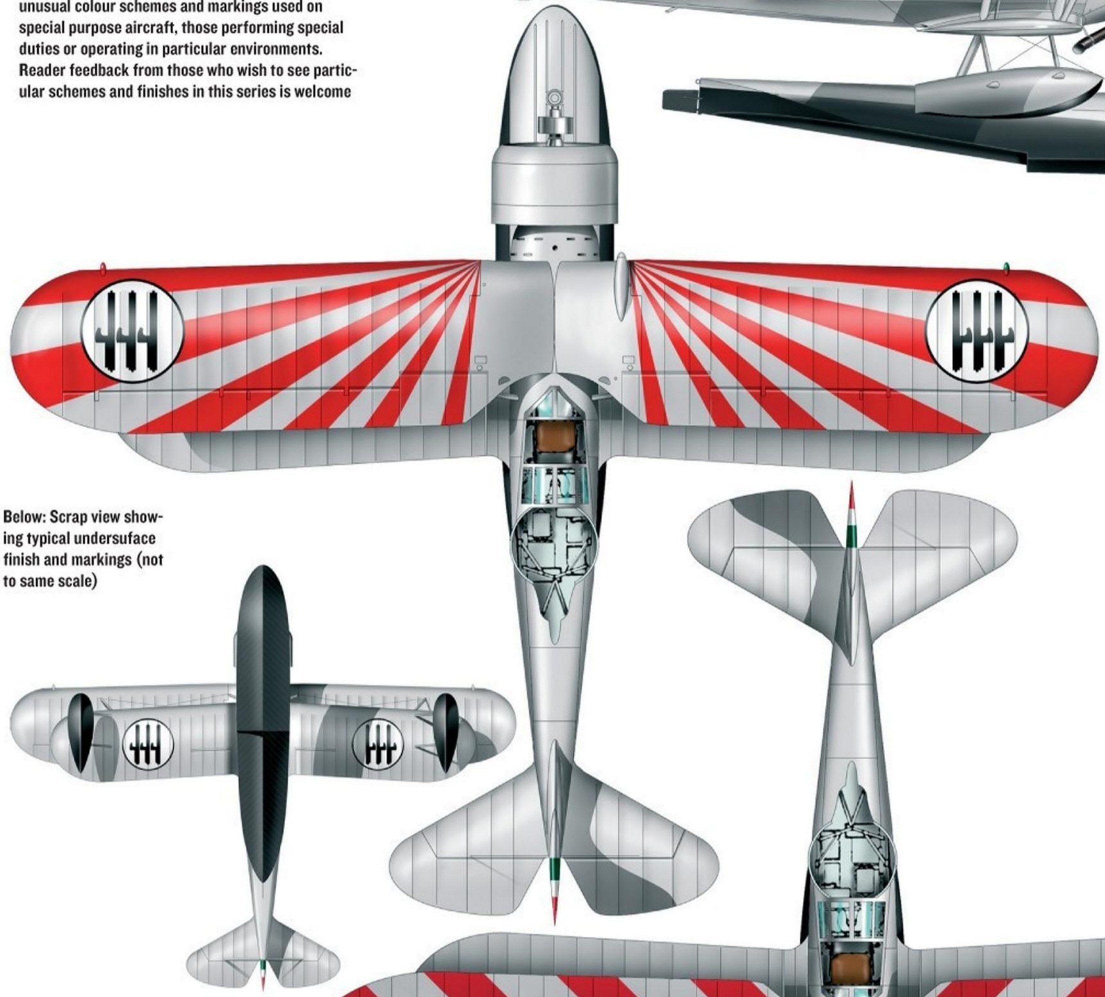


Messerschmitt Bf 109G-10, ex-Bulgarian AF, W/Nr.610937, 9644/44, Yugoslav Air Force, spring 1945. Medium grey/dark brown upper surfaces with light blue undersides; national markings in six positions. Black serial on fin, white code on fuselage sides



ANTI-CAMOUFLAGE – 1

First in a new non-regular series exploring some unusual colour schemes and markings used on special purpose aircraft, those performing special duties or operating in particular environments. Reader feedback from those who wish to see particular schemes and finishes in this series is welcome



Above & Left: IMAM Ro.43 MM.27056 flying from the cruiser Montecuccioli, Regia Marina, as it appeared during the ship's cruise to Sydney, Australia, in January 1938. Aluminium finish overall with black anti-fouling paint to bottom of central float and outriggers; red fan-like bands above the top wing only. National markings consist of black fasces markings above top and below bottom wings over white background. Small fasces markings on fuselage sides; red/white/green rudder bars with House of Savoy emblem superimposed on white section. Ship's name in red, serial in black

Below: Scrap view showing typical undersuface finish and markings (not to same scale)

Below and Right: IMAM Ro.43, MM.27163/3, flying off the cruiser Montecuccioli, Regia Marina, 1937. Aluminium finish overall with black anti-fouling paint to bottom of central float and outriggers; red angled bands above the top wing only. National markings consist of black fasces markings above top and below bottom wings over white background. Small fasces markings on fuselage sides; red/white/green rudder bars, no House of Savoy emblem on white section. Ship's name and individual number below tailplane in red, serial in black

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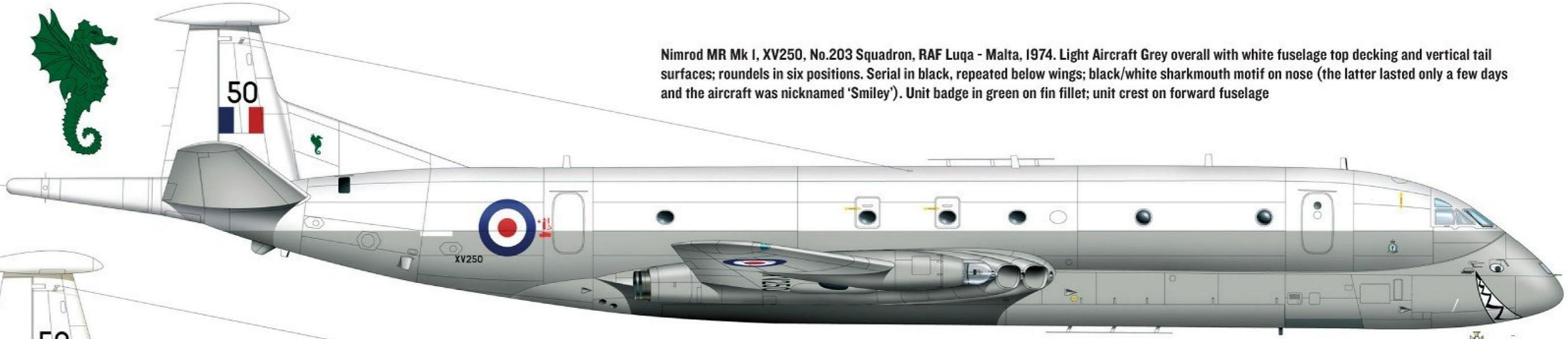
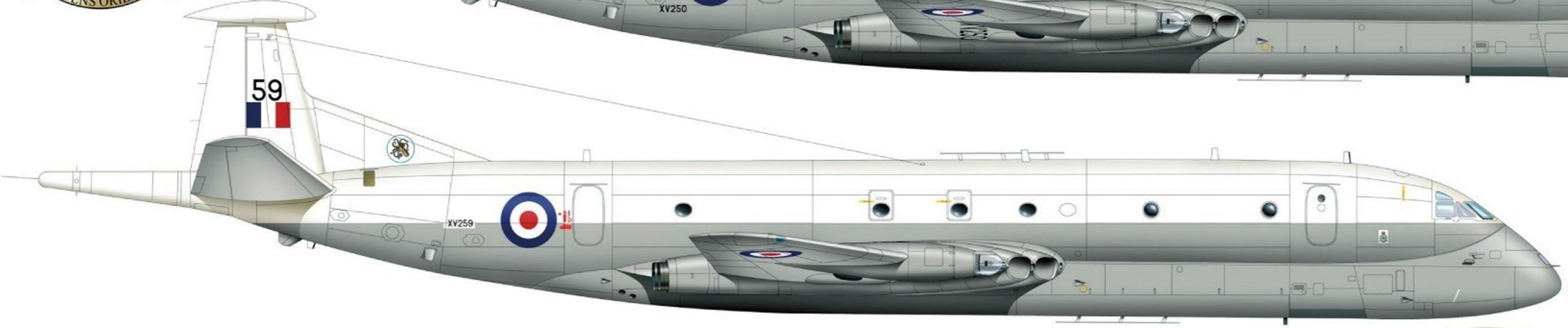
SCALE 1:72

0 metres 1 2

0 feet 3 6

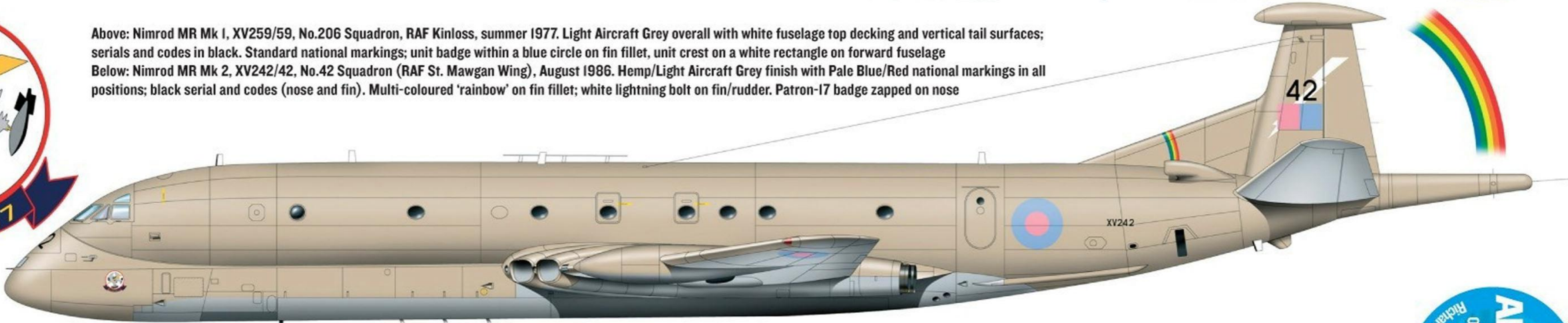


Nimrod MR Mk 1, XV250, No.203 Squadron, RAF Luqa - Malta, 1974. Light Aircraft Grey overall with white fuselage top decking and vertical tail surfaces; roundels in six positions. Serial in black, repeated below wings; black/white sharkmouth motif on nose (the latter lasted only a few days and the aircraft was nicknamed 'Smiley'). Unit badge in green on fin fillet; unit crest on forward fuselage



Above: Nimrod MR Mk 1, XV259/59, No.206 Squadron, RAF Kinloss, summer 1977. Light Aircraft Grey overall with white fuselage top decking and vertical tail surfaces; serials and codes in black. Standard national markings; unit badge within a blue circle on fin fillet, unit crest on a white rectangle on forward fuselage

Below: Nimrod MR Mk 2, XV242/42, No.42 Squadron (RAF St. Mawgan Wing), August 1986. Hemp/Light Aircraft Grey finish with Pale Blue/Red national markings in all positions; black serial and codes (nose and fin). Multi-coloured 'rainbow' on fin fillet; white lightning bolt on fin/rudder. Patron-17 badge zapped on nose



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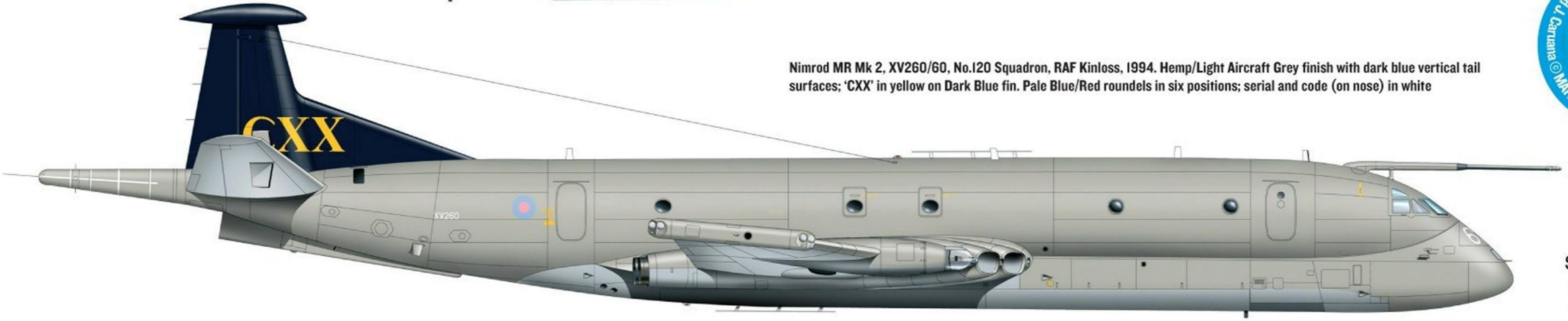
Nimrod MR Mk 2, XV260/60, No.120 Squadron, RAF Kinloss, 1994. Hemp/Light Aircraft Grey finish with dark blue vertical tail surfaces; 'CXX' in yellow on Dark Blue fin. Pale Blue/Red roundels in six positions; serial and code (on nose) in white



Scale: 1/144

0 metres 1 2

0 feet 3 6

RAF MUSTANGS Pt.3
(North American Mustang Mk IV)

This feature does not include Mustangs Mk IV in service with Commonwealth squadrons. These will be covered in a separate, future article

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The three views on this page show North American Mustang Mk IVA (42-11602), KH774, GA•S of No.112 Squadron operating from Cervia (Italy) in April 1945. It is typical of RAF Mustang Mk IVs of the period and is finished in US produced colours of Olive Drab ANA 613/Sea Grey ANA 603 upper surfaces with Light Grey ANA 602 undersides; codes are in ANA 610 Sky. Other details include a red spinner and black/white/red 'sharkmouth' motif around nose. Serials are 8" high in Night; upper wing blue/red national marking applied by the manufacturer has been converted to blue/white/red by the addition of white

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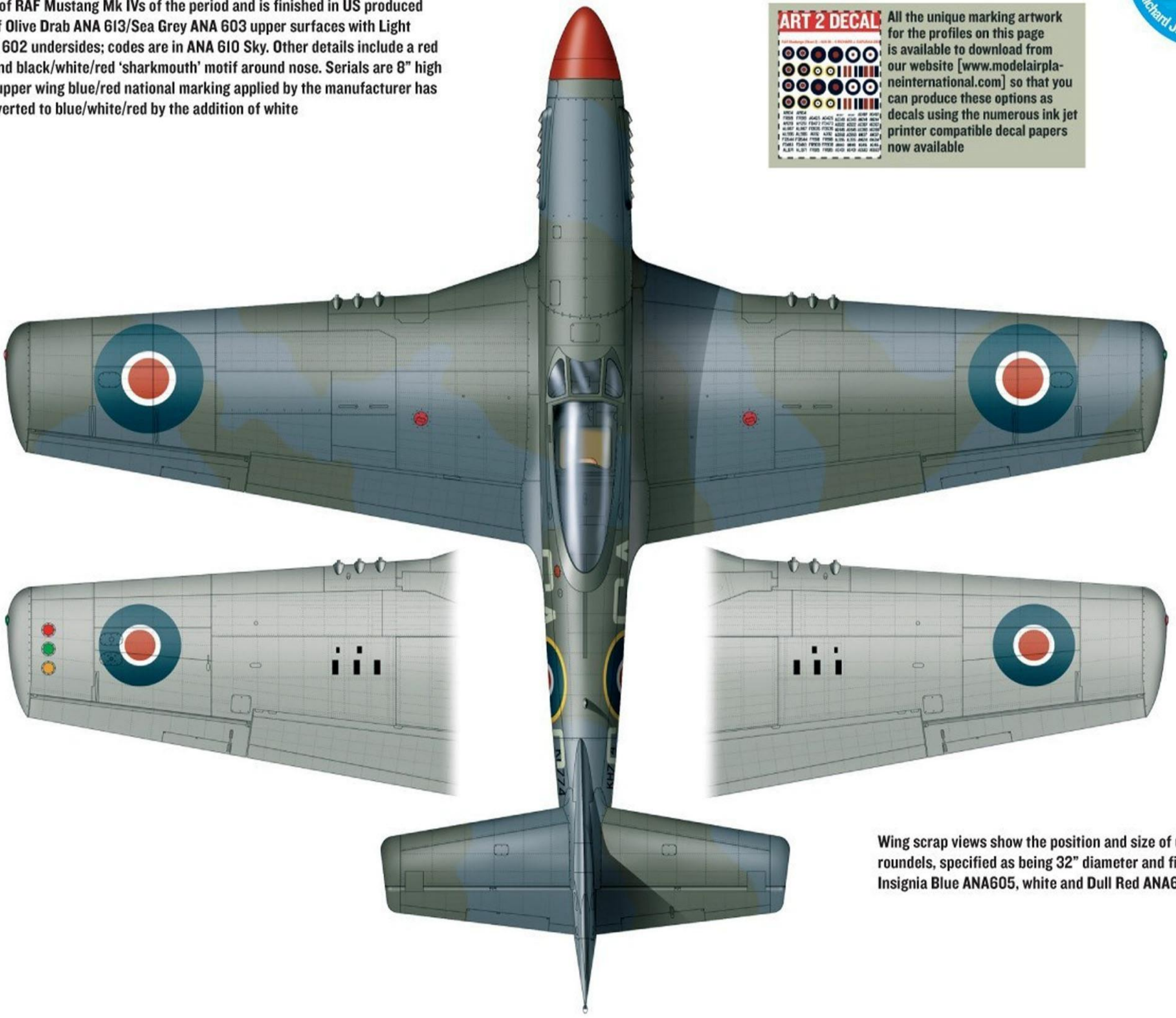


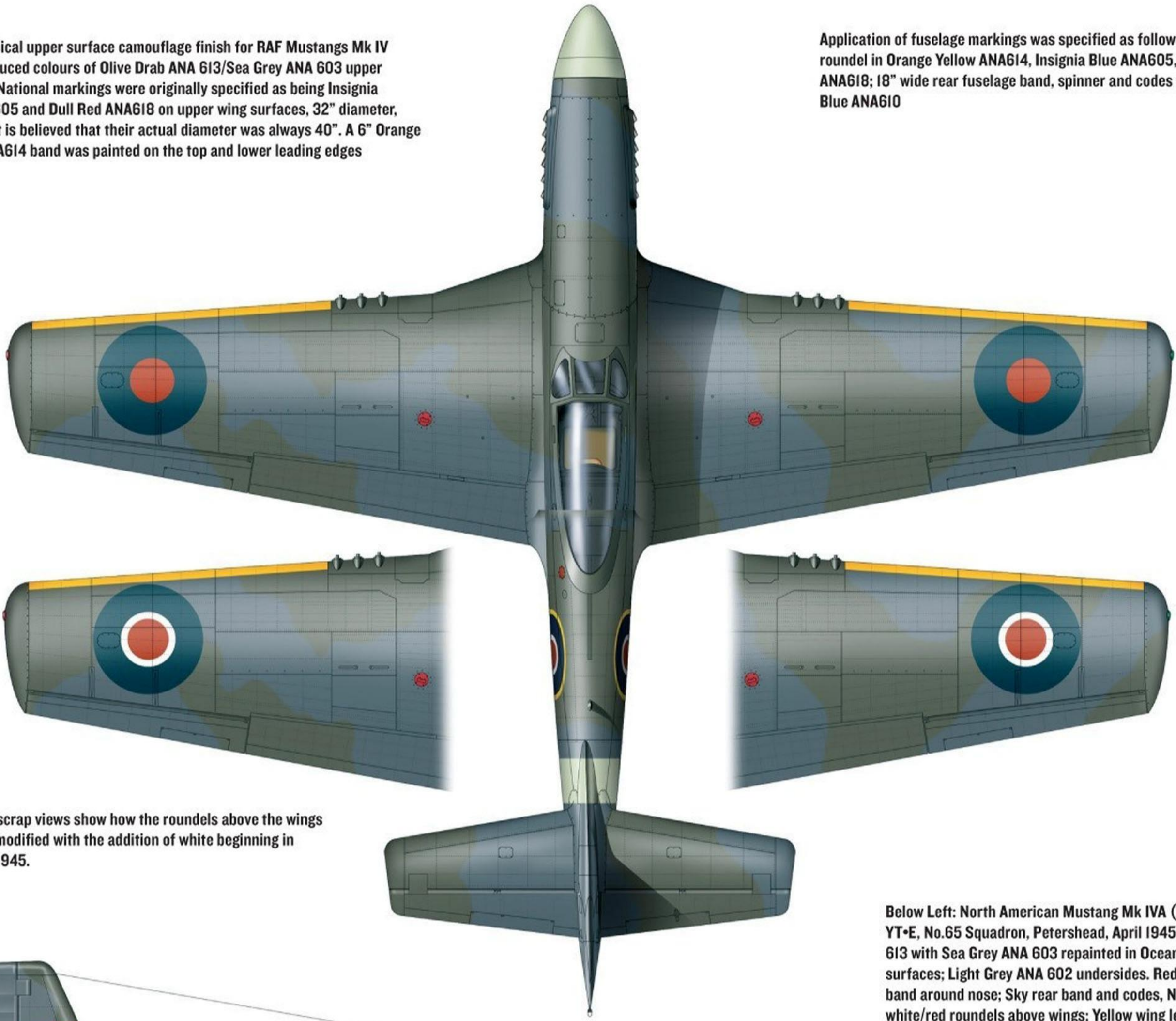
Wing scrap views show the position and size of underwing roundels, specified as being 32" diameter and finished in Insignia Blue ANA605, white and Dull Red ANA618

1:72 Scale
0 metres 1 2
0 feet 3 6

North American Mustang Mk IV (11169), KH642, MT•M, No.122 Squadron, Peterhead, May 1945. Olive Drab ANA 613 with Sea Grey ANA 603 repainted in Ocean Grey on upper surfaces; Light Grey ANA 602 undersides. Red spinner, Yellow wing leading edges; Sky codes, Night serials. Blue/white/red roundels above wings

Below: Typical upper surface camouflage finish for RAF Mustangs Mk IV in US produced colours of Olive Drab ANA 613/Sea Grey ANA 603 upper surfaces. National markings were originally specified as being Insignia Blue ANA605 and Dull Red ANA618 on upper wing surfaces, 32" diameter, although it is believed that their actual diameter was always 40". A 6" Orange Yellow ANA614 band was painted on the top and lower leading edges

Application of fuselage markings was specified as follows: 36" diameter roundel in Orange Yellow ANA614, Insignia Blue ANA605, white, Dull Red ANA618; 18" wide rear fuselage band, spinner and codes were to be in Sky Blue ANA610



Wing scrap views show how the roundels above the wings were modified with the addition of white beginning in early 1945.

Below Left: North American Mustang Mk IVA (11398), KH695, YT•E, No.65 Squadron, Petershead, April 1945. Olive Drab ANA 613 with Sea Grey ANA 603 repainted in Ocean Grey on upper surfaces; Light Grey ANA 602 undersides. Red spinner, white band around nose; Sky rear band and codes, Night serials. Blue/white/red roundels above wings; Yellow wing leading edges

North American Mustang Mk IVA (11703), KH795, GA•Y, No.112 Squadron, Lavariano (Italy), early 1946. Natural metal and Aluminium finish with Olive Drab anti-dazzle panel; red spinner front. Black/white/red 'sharkmouth' motif on nose; codes are believed to have been middle blue. Night serials, repeated below wings

1:72 Scale
0 metres 1 2
0 feet 3 6

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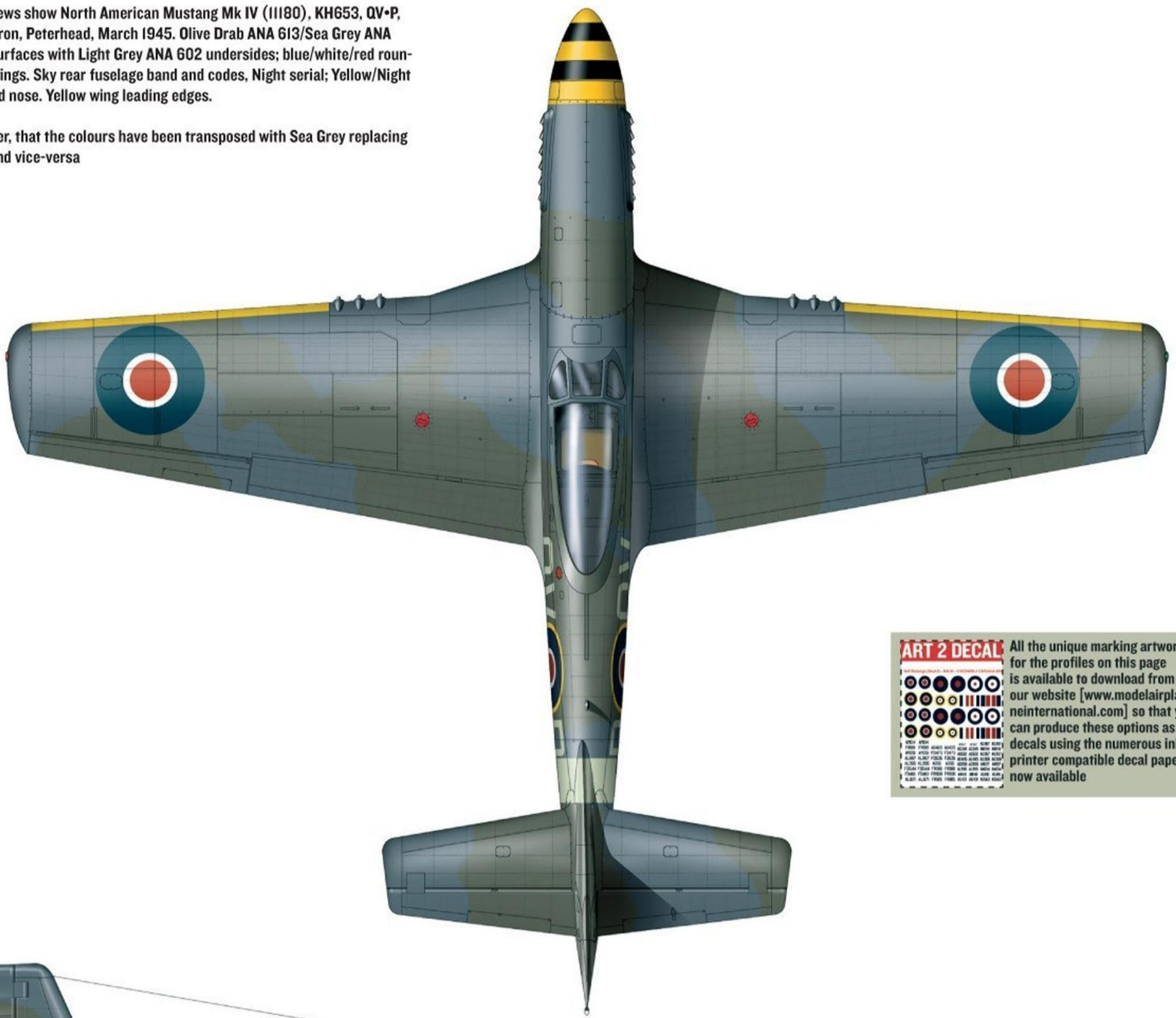
The three-views show North American Mustang Mk IV (11180), KH653, QV•P, No.19 Squadron, Peterhead, March 1945. Olive Drab ANA 613/Sea Grey ANA 603 upper surfaces with Light Grey ANA 602 undersides; blue/white/red roundels above wings. Sky rear fuselage band and codes, Night serial; Yellow/Night bands around nose. Yellow wing leading edges.

Note, however, that the colours have been transposed with Sea Grey replacing Olive Drab and vice-versa



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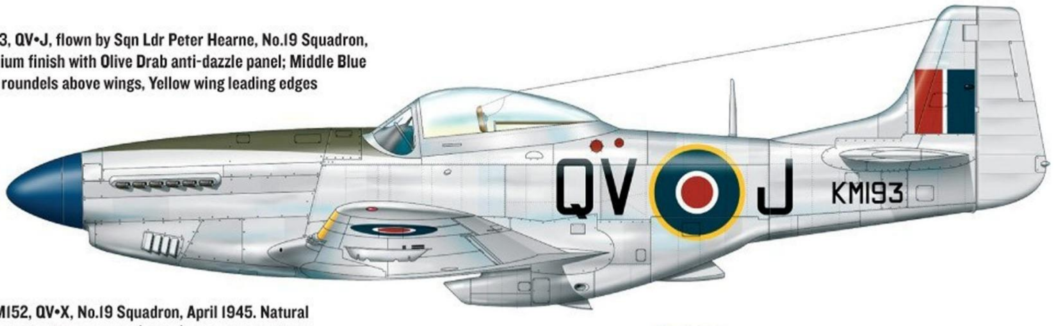
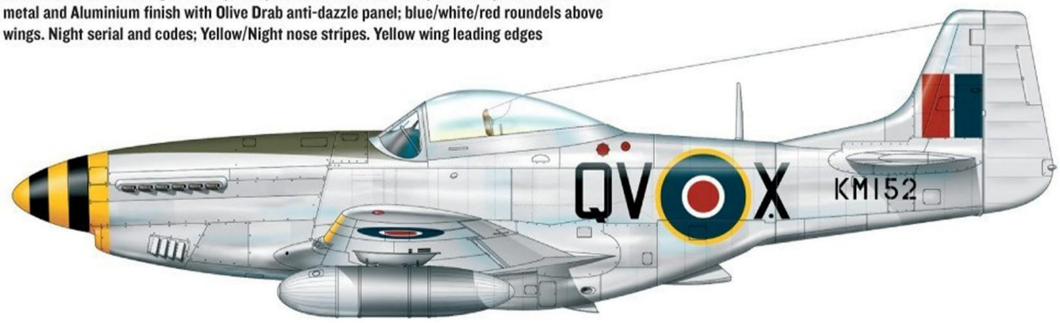
North American Mustang Mk IV, (serial unknown), DV•I, No.93 Squadron, Italy, 1946. Non-standard camouflage pattern indicates that upper surfaces were probably repainted in Ocean Grey and Dark Green; Light Grey ANA 602 undersides. White top of vertical tail surfaces; medium blue spinner. Sky codes; reader feedback with any info re. serial would be appreciated

1:72 Scale
0 metres 1 2
0 feet 3 6

North American Mustang Mk IVA (12316), KM193, QV•J, flown by Sqn Ldr Peter Hearne, No.19 Squadron, Peterhead, April 1945. Natural metal and Aluminium finish with Olive Drab anti-dazzle panel; Middle Blue spinner. Night serials and codes; blue/white/red roundels above wings, Yellow wing leading edges



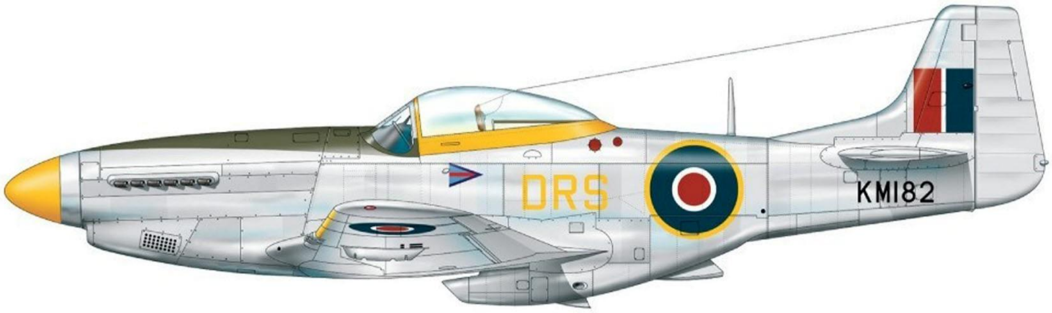
North American Mustang Mk IVA (12275), KM152, QV•X, No.19 Squadron, April 1945. Natural metal and Aluminium finish with Olive Drab anti-dazzle panel; blue/white/red roundels above wings. Night serial and codes; Yellow/Night nose stripes. Yellow wing leading edges

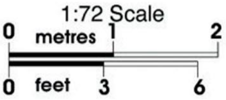


North American Mustang Mk IVA (11726), KH818, QV•P, No.19 Squadron, Peterhead, May 1945. Natural metal and Aluminium finish with Olive Drab anti-dazzle panel; blue/white/red roundels above wings. Yellow/Night nose bands; Night serial and codes. Yellow wing leading edges

North American Mustang Mk IVA (11539), KH765, HG•R, No.154 Squadron, early 1945. Natural metal and Aluminium overall with Olive Drab anti-dazzle panel; blue/white/red roundels above wings. Night serials; 'R' of code is believed to be red and 'HG' in Night

North American Mustang Mk IVA (12355), KM232, JAS•, flown by Wing Commander J.E. Storrar, Wing Leader, Digby, summer 1945. Natural metal and Aluminium finish; light blue anti-dazzle panel extending onto lower canopy frame, outlined in dark blue. Codes believed to be blue, thinly outlined in red; rank pennant below windscreen. Night serials; blue/white/red roundels above wings, Yellow wing leading edges

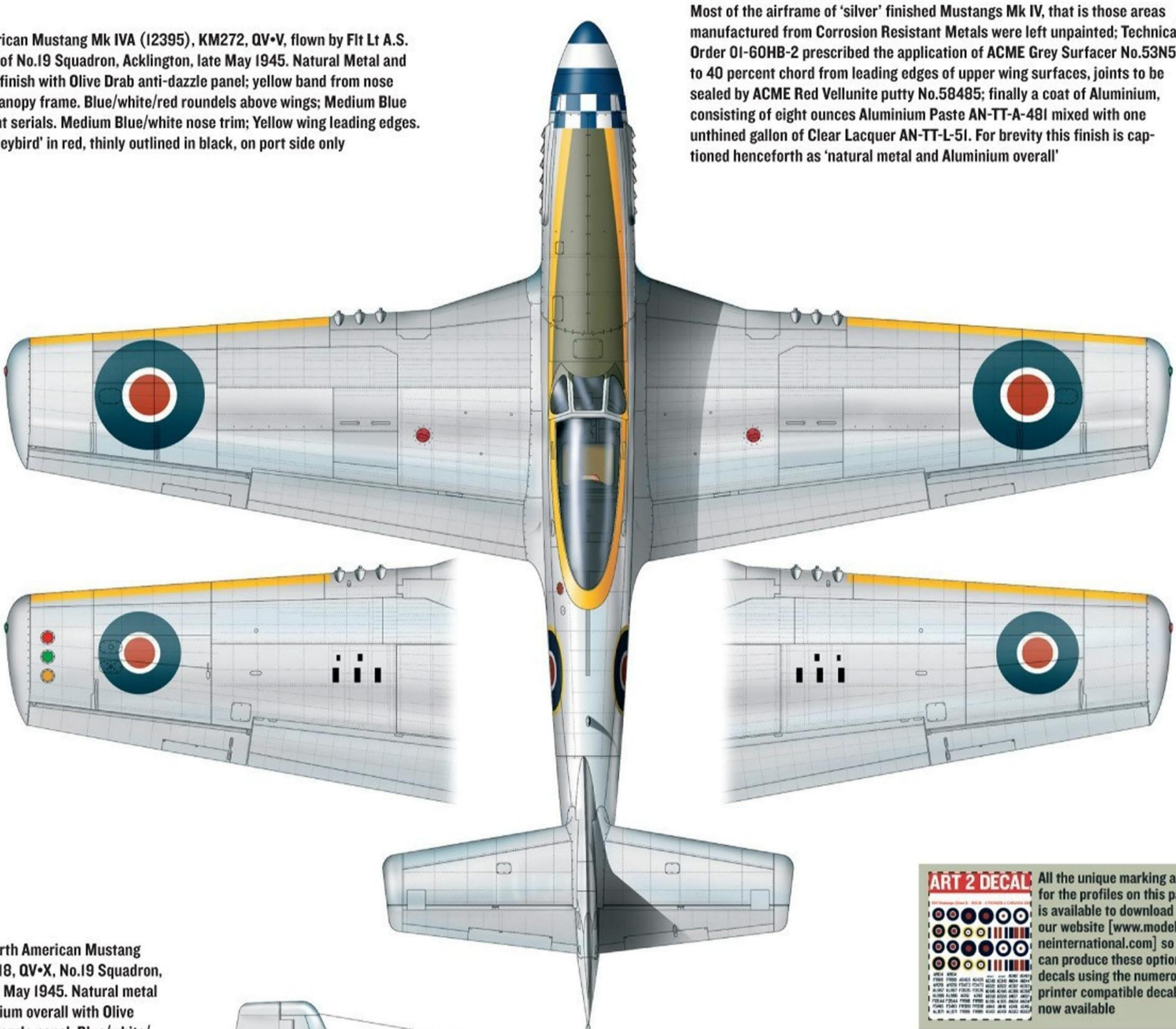




North American Mustang Mk IVA (12395), KM272, QV•V, flown by Flt Lt A.S. 'Joe' Doley of No.19 Squadron, Acklington, late May 1945. Natural Metal and Aluminium finish with Olive Drab anti-dazzle panel; yellow band from nose to rear of canopy frame. Blue/white/red roundels above wings; Medium Blue codes, Night serials. Medium Blue/white nose trim; Yellow wing leading edges. Name 'Dooleybird' in red, thinly outlined in black, on port side only

General Note – 'Silver' Mustangs Mk IV

Most of the airframe of 'silver' finished Mustangs Mk IV, that is those areas manufactured from Corrosion Resistant Metals were left unpainted; Technical Order 01-60HB-2 prescribed the application of ACME Grey Surfacer No.53N5 to 40 percent chord from leading edges of upper wing surfaces, joints to be sealed by ACME Red Vellunite putty No.58485; finally a coat of Aluminium, consisting of eight ounces Aluminium Paste AN-TT-A-481 mixed with one unthined gallon of Clear Lacquer AN-TT-L-51. For brevity this finish is captioned henceforth as 'natural metal and Aluminium overall'



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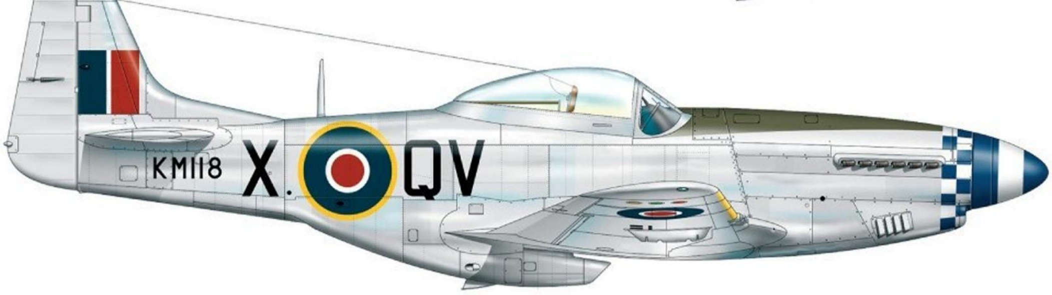
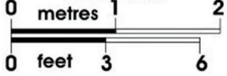
Bottom: North American Mustang Mk IV, KM118, QV•X, No.19 Squadron, Acklington, May 1945. Natural metal and Aluminium overall with Olive Drab anti-dazzle panel; Blue/white/red roundels above wings. Yellow wing leading edges; Night codes and serial. Blue/white trim to nose and spinner





North American Mustang Mk IVA (11991), KM138, AK•Y, No.213 Squadron, Biferno (Italy), May 1945. Natural metal and Aluminium finish with Olive Drab anti-dazzle panel; blue/white/red roundels above wings. Night serial; Night codes, outlined in yellow

North American Mustang Mk IVA (11724), KH816, AK•M, No.213 Squadron, 1946. Natural metal and Aluminium finish with Olive Drab anti-dazzle panel; blue/white roundels above wings; Night serials, repeated below wings. Red spinner with white band; Yellow codes, outlined in black

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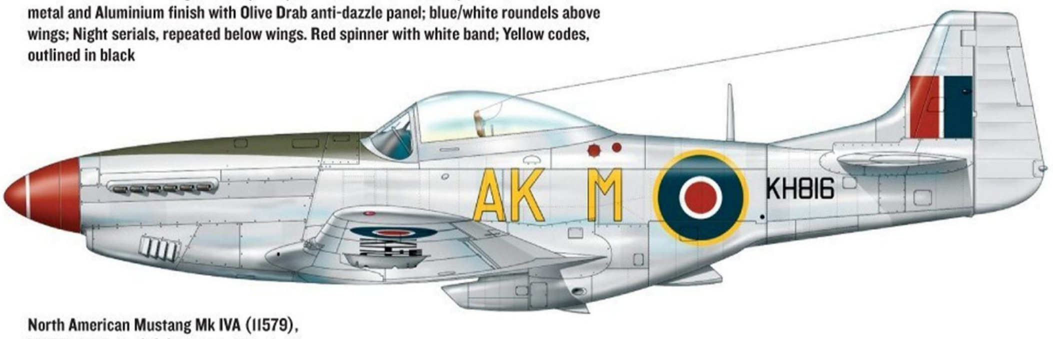
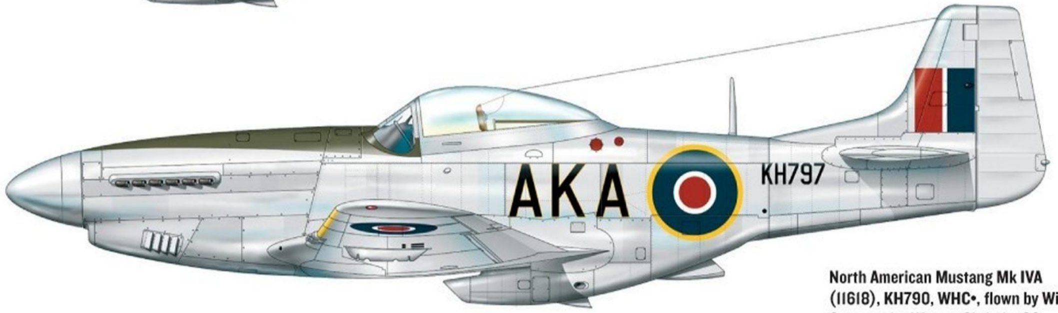


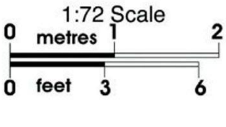
North American Mustang Mk IVA (11579), KH751, AK•E, No.213 Squadron, Nicosia (Cyprus), 1946. Natural metal/Aluminium finish with Olive Drab anti-dazzle panel; blue/white/red roundels above wings; Night serials, repeated below wings. Yellow codes, outlined in black, yellow band across fin

North American Mustang Mk IVA (12589), KM348, AK•V, No.213 Squadron, Nicosia (Cyprus), 1946. Natural metal and Aluminium finish with Night anti-dazzle panel, codes and serials, the latter repeated below the wings; Blue/white/red roundels above wings

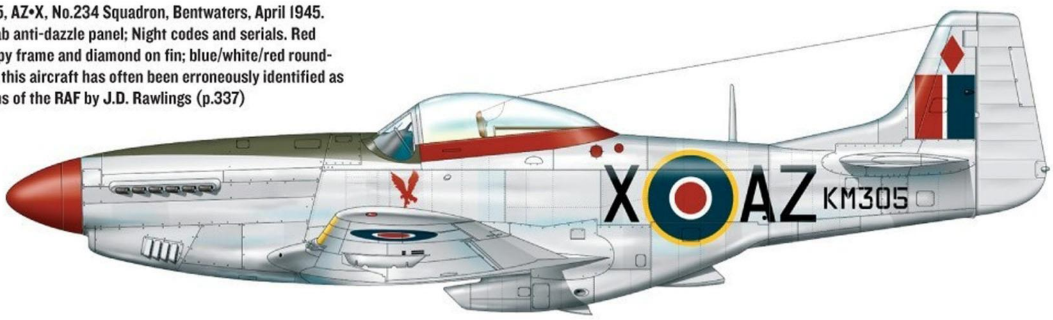
North American Mustang Mk IVA (11705), KH797, AKA, No.213 Squadron, Italy, May 1945. Natural metal and Aluminium finish with Olive Drab anti-dazzle panel; Night codes, thinly outlined in Yellow, Night serials. Blue/white/red roundels above wings



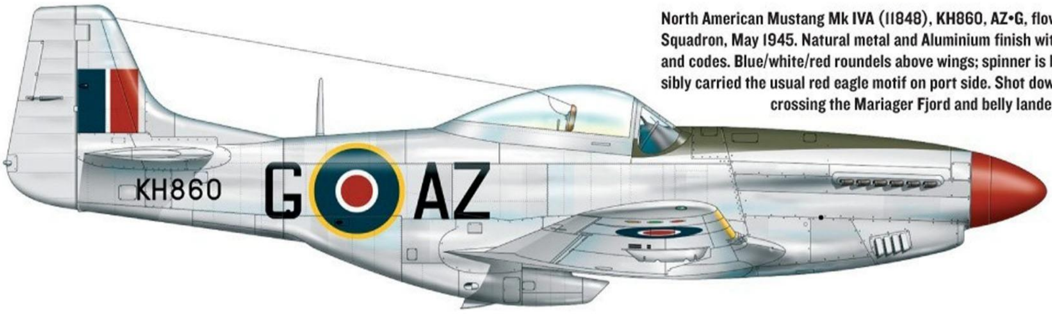
North American Mustang Mk IVA (11618), KH790, WHC•, flown by Wing Commander Werner Christie, CO Hunsdon Wing, 1945. Natural metal and Aluminium finish with Olive Drab anti-dazzle panel; Red spinner. Blue/white/red roundels above wings; Yellow leading edges. Night codes and serials



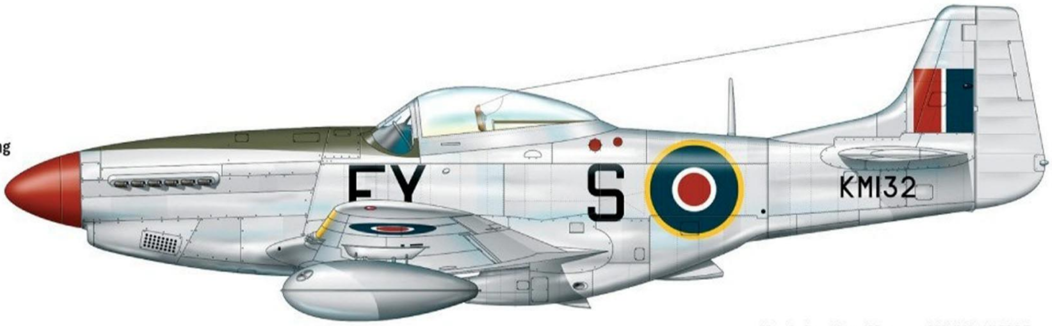
North American Mustang Mk IVA (12428), KM305, AZ•X, No.234 Squadron, Bentwaters, April 1945. Natural metal and Aluminium finish with Olive Drab anti-dazzle panel; Night codes and serials. Red 'eagle' motif below windscreen, lover half of canopy frame and diamond on fin; blue/white/red roundels above wings, Yellow wing leading edges. Note: this aircraft has often been erroneously identified as KM306; for photographic reference see Squadrons of the RAF by J.D. Rawlings (p.337)



North American Mustang Mk IVA (11848), KH860, AZ•G, flown by Plt Off. Peter J.W. Bell, No.234 Squadron, May 1945. Natural metal and Aluminium finish with Olive Drab anti-dazzle panel; Night serials and codes. Blue/white/red roundels above wings; spinner is believed to have been red. Could have possibly carried the usual red eagle motif on port side. Shot down by flak during anti-shipping sortie while crossing the Mariager Fjord and belly landed near Hornum



North American Mustang Mk IVA (11985), KM132, FY•S, No.611 Squadron, Hunsdon, May 1945. Natural metal and Aluminium finish with Olive Drab anti-dazzle panel; Red spinner and lower canopy frame; Night codes and serials. Blue/white/red roundels above wings, Yellow wing leading edges



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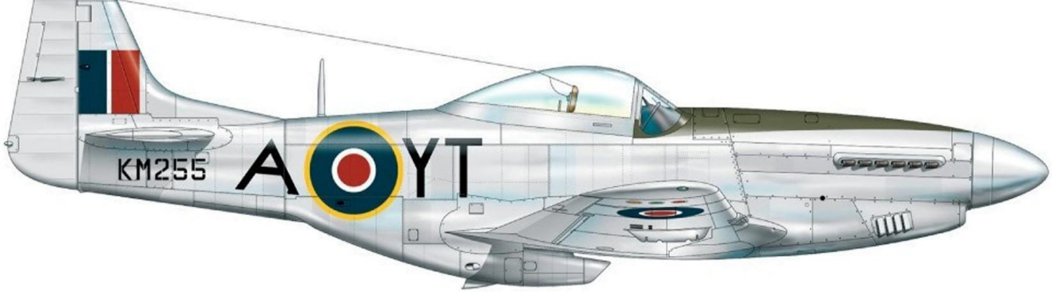
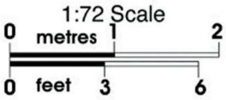
North American Mustang Mk IVA, KM305, 5J•X, No.126 Squadron, Bentwaters, August 1945. Natural metal and Aluminium overall with Olive Drab anti-dazzle panel; Yellow spinner and canopy frame. Night codes, Night serials repeated below wings; blue/white/red roundels above wings. Red 'eagle' motif on forward fuselage

North American Mustang Mk IVA (11820), KH832, GA•J, No.112 Squadron, Italy, 1946. Natural metal and Aluminium finish with Olive Drab anti-dazzle panel; Red spinner. Middle blue codes; Night serials, repeated below wings. Black/white/red sharkmouth motif on nose

Below: North American Mustang Mk IVA (12378), KM255, YT•A, No.65 Squadron, probably late 1945 or early 1946. Natural metal and Aluminium finish with Olive Drab anti-dazzle panel; blue/white/red roundels above wings. Nighter serials and codes; note unusual style and position of individual code letter 'A'





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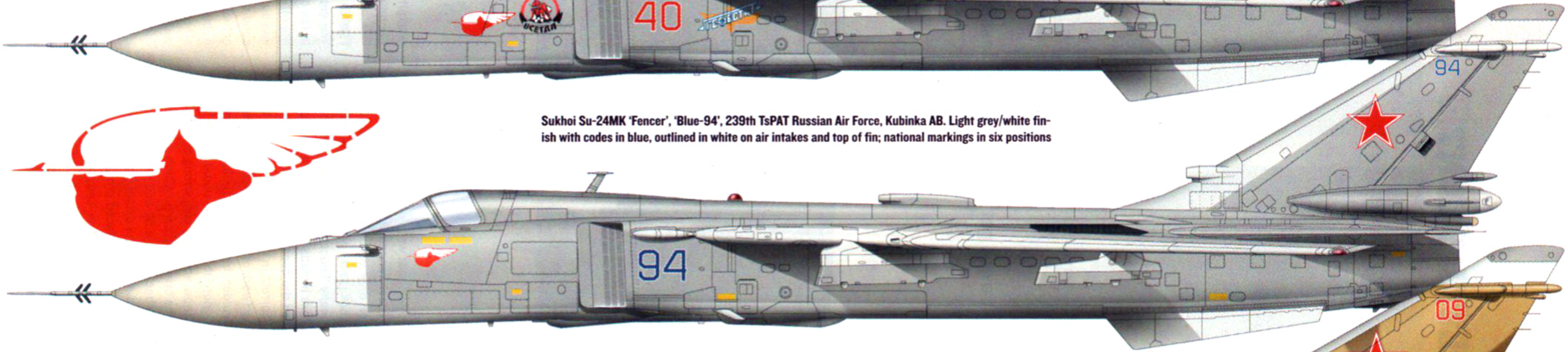
Sukhoi Su-24M 'Fencer', 'Red 40', 4th TsBP i PLS, Russian Air Force, 2002. Light grey/white finish with red code, outlined in white (repeated in white on fin); unit badge and Sukhoi logo on forward fuselage. Gefest & T logo on air intakes

Sukhoi Su-24MK 'Fencer', 'Blue-94', 239th TsPAT Russian Air Force, Kubinka AB. Light grey/white finish with codes in blue, outlined in white on air intakes and top of fin; national markings in six positions



Sukhoi Su-24MK 'Fencer', 'Red 09', Krasnodarsk Flying & Technical College, Russian Air Force, 1993. Two-tone brown upper surfaces with light blue undersides; star national markings in six positions. Codes red, outlined in white; yellow 'eye' on forward fuselage, outlined in black. Red 'exclamation mark', outlined in white ahead of air intakes; badge on nose

Sukhoi Su-24MP 'Fencer', 'White 15', 118th OAPREB, Ukranian Air Force, Chortkov. Light grey/white finish with white codes on air intake and fin; roundel (see far left) in blue and yellow on wings only

Westland Whirlwind Mk. , L6844, September 1939. Wraparound camouflage of Dark Earth and Dark Green with Night port and white starboard undersides of wings and tailplane. Black serial on fuselage sides, repeated under starboard wing, and in white under port. 'B' type roundels on fuselage and above wings only

Below: Westland Whirlwind Mk I (Early production), P6967, 1940. Dark Earth/Dark Green uppersurfaces with Night/white undersides of wings and tailplane (see scrap view far left); blue/red roundels above wings. Large flash covering most of the fin; served with No.25 Squadron for operational evaluation, and later with both Nos.263 and 137 Squadrons

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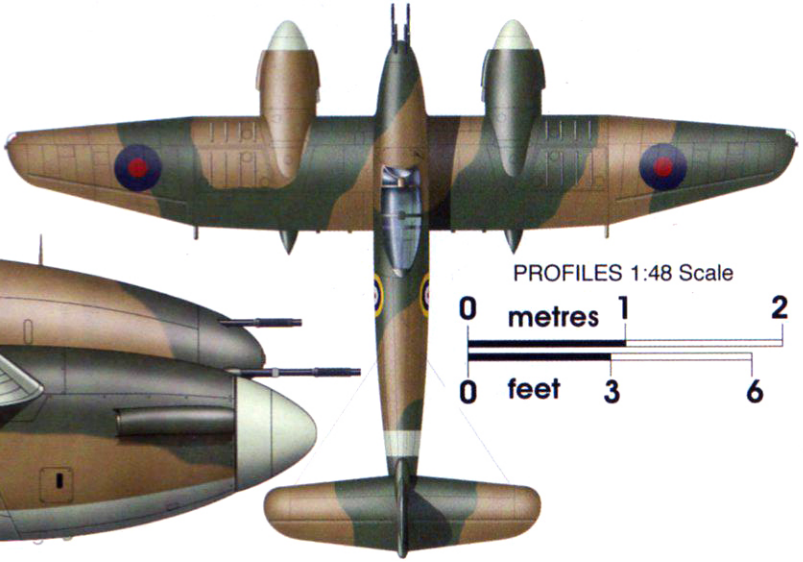
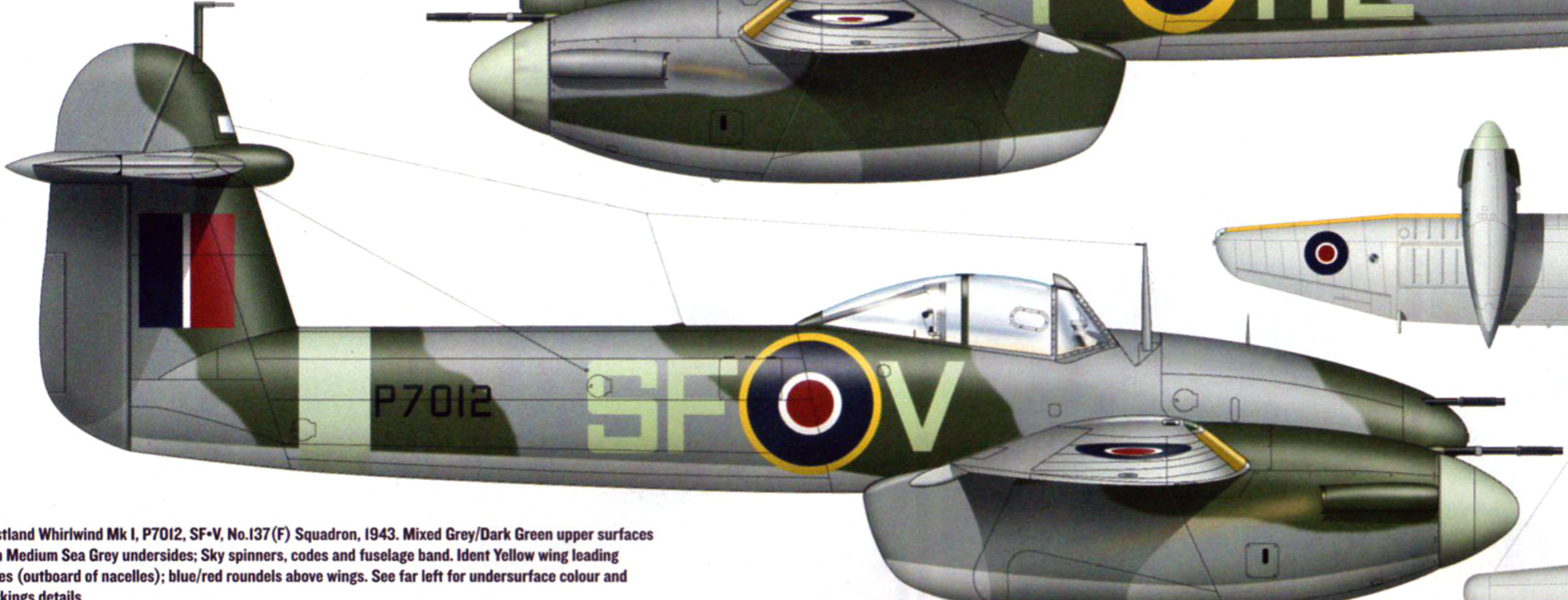
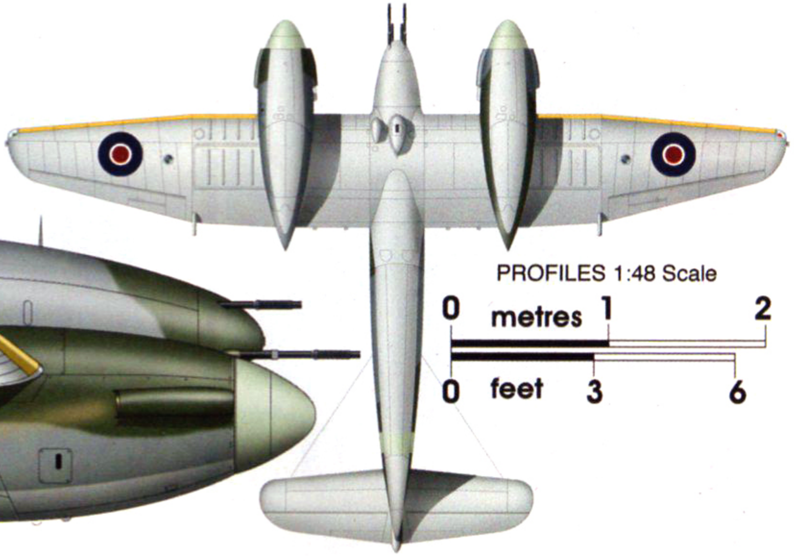


Westland Whirlwind Mk I, P6969, HE•V, No.263(F) Squadron, August 1940. Dark Earth/Dark Green upper surfaces with Sky undersides; standard national markings and large fin flash. Medium Sea Grey codes, Night serial; blue/red roundels above wings

Below: Westland Whirlwind Mk I, P7094, HE•T, No.263(F) Squadron, 1942-43. Mixed Grey/Dark Sea Grey upper surfaces with Medium Sea Grey undersides; Mixed Grey areas, especially on the forward fuselage have been repainted in a darker mix. Sky spinner, codes and rear fuselage band; pilot's name "F Lt Blackshaw" in white on original Dark Earth background. 'Bellows' in white below cockpit with black/white bellows marking. Fin bullet in blue/white/red

Further Down: Westland Whirlwind Mk I, P7116, HE•F, flown by Sqn Ldr Eelse of No 263 (F) Squadron, 1941/42. Ocean Grey/Dark Green upper surfaces with Medium Sea Grey undersides. Sky codes, spinners and fuselage band. Red/white checks on fin bullet and Ident Yellow wing leading edges (outboard of nacelles). White marking on front fuselage, rank pennant under cockpit and 'Bellows Argentina No.2" in light grey; blue/red roundels above wings





Westland Whirlwind Mk I, P7012, SF•V, No.137(F) Squadron, 1943. Mixed Grey/Dark Green upper surfaces with Medium Sea Grey undersides; Sky spinners, codes and rear fuselage band. Ident Yellow wing leading edges (outboard of nacelles); blue/red roundels above wings. See far left for undersurface colour and markings details

FORK-TAILED DEVIL

The Lockheed P-38 Lightning

Throughout the wartime period the USAAF relied mainly on a trio of fighters two of which, the North American P-51 Mustang and the Republic P-47 Thunderbolt have already been dealt in some detail in previous issues. The third of the trio was the Lockheed P-38 Lightning, an aircraft that was unique in many respects but which was produced in relatively smaller quantities.

Yet the Lockheed P-38 Lightning became a controversial aircraft even though it represented to its opponents one of the most feared and respected fighters to appear at that time. It possessed a lethal concentration of fire in its nose and as an escort fighter it's unmistakable silhouette was a most welcome sight for bomber crews flying over enemy territory. Thanks to its long range it could accompany bombers all the way to Berlin and beyond, and it soon earned itself a reputation as being the best Allied escort fighter. In comparison to the Mustang and Thunderbolt, the Lightning was somewhat slower and though a little less manoeuvrable it offered the comfort of twin-engined safety. Its twin boom configuration made it unique. And its ability to return home on one engine was exceptional saving hundreds of pilots' from what could have otherwise been fatal circumstances.

Origins of the Lightning go back to 1935 when a small group of Army Air Corps officers rightly argued that peacetime considerations were placing unacceptable limitations on aircraft design. For instance, if an aircraft was required to carry double the normal armament a twin-engined fighter would have been the most sensible solution. Following long considerations, proposals were drawn up in 1935 and circulated to selected manufacturers early in 1936; one was for a single-engined fighter and the other for a twin; both were expected to carry heavy armament, to have a high rate of climb, to have engine turbo-supercharges and tricycle undercarriages. Among the companies to receive details of this circular, together with the more complete specification for a twin-engined interceptor, was Lockheed Aircraft Corporation. By that time Lockheed had already been working for a year on an aircraft that it had designated as Model 22, born as a result of verbal briefings on Army Air Corps thinking.

Lockheed won the design contest and received a contract to build a prototype in June 1937. The XP-38 was completed towards the end of the following year and taxi trials started soon afterwards. On its maiden flight severe wing flap vibrations almost forced the pilot to abandon the aircraft but he managed to minimise the effect by maintaining a high angle of attack, landing uneventfully after a 34-minute flight. Following this first flight, that could hardly have been considered a success, test flying continued and by 10 February 1939 a total of over four hours had been logged and progress was considered to be satisfactory. The next step was the delivery of the aircraft from March Field, California to Wright Field in Ohio for official Army testing. It had been decided to allow the pilot, Lt Kelsey, to ferry the aircraft in flight to Ohio in an attempt at setting a new speed record, with the option to proceed to New York. The pilot reached Wright Field without incident and then continued to Mitchell Field, NY arriving there at an average speed of 350 mph. Unfortunately the XP-38 suffered loss of power in the final stages of the landing approach and overshot the runway, ending up beyond repair with a broken fuselage; Kelsey escaped unhurt.

Less than three months after the crash Lockheed received a contract to build 13 YP-38 service test versions of the new two-engined fighter. The company defined its Model 122 by October 1939; the aircraft had a short fuselage housing the pilot and armament while the twin 'F series Allison engines' cowlings were extended aft of the wing trailing edges as booms, housing the oil coolers and ending in vertical tail surfaces. As 1939 gave way to 1940 Lockheed could clearly foresee the inevitable massive expansion of the US armed forces and that its twin-boom fighter would figure prominently in these plans. It also anticipated that orders would be forthcoming from the European nations already at war. Plans were therefore made to stretch the pre-production run to 80 aircraft, including the YPs on order for the United States Army Air Corps (USAAC). The first pre-production aircraft was flown in September 1940. Well before that date, however, Lockheed's venture was vindicated as during May 1940 the French and British Purchasing Commissions in New York concluded agreements with Lockheed to buy 417 and 259 aircraft respectively; France capitulated within a week of the order and its entire order was taken over by Britain. Subsequently in July the USAAC contracted for another 66 aircraft to be designated P-38.

Production P-38s were similar to the YP-38 except for the standardisation of the nose machine guns at 0.50in. and for the adding of armour protection for the pilot. Only thirty aircraft were completed to this standard. The

A rather unusual visitor to Malta during World War II, Lockheed P-38/F-5A of the 3rd Photo Reconnaissance Group, USAAF, late in 1942, painted in 'Haze' colours (R. Caruana Archives)

other 36 were P-38Ds with self-sealing tanks and improved armour protection. Testing of YP-38s revealed a number of problems, most of which were soon solved. During the testing period Lockheed could barely keep up with production of its export commitments together with the backlog of USAAF orders. To follow the P-38/P-38D batch the Army had ordered a further 140 aircraft and additional orders followed at nearly regular intervals. By the end of 1941, with the US poised on the brink of war, production took the form of the Army's P-38E and the British Model 322-B. At that time the name 'Lightning' was chosen for the P-38. The name was confirmed by Britain and the two versions that were planned for inclusion in the Royal Air Force's (RAF) batch of 667 were designated Lightning Mk I and Lightning Mk II; however, none of these were to enter RAF service.

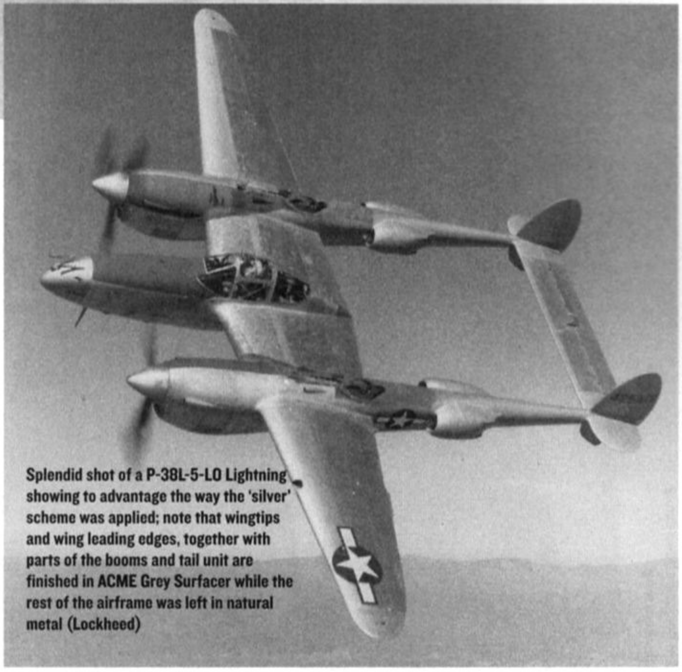
The 'British' Lightnings had several fundamental differences from the P-38Ds. Most notable was the less powerful Allison V-1710-33 lacking turbo-superchargers, providing 1,090hp. The first Lightning Mk I to fly in full RAF colours took to the air in August 1941 and the second in October, but only three examples were accepted by Britain where operational requirements had rendered the aircraft unsuited. Production of the full batch of 143 Lightning Mk Is went ahead nonetheless, with 140 going to the United States Army Air Force (USAAF, as the corps was redesignated on 20 June 1941) under the designation P-322.

Although the RAF had abandoned acceptance of the Lightning Mk I it still intended to acquire 524 Lightning Mk.IIs that would be brought up to P-38E specifications among which changes it included the introduction of handed propellers and turbo-supercharged engines. Only one of these aircraft was ever completed in RAF colours; late in summer 1941 the RAF test pilot at Burbank filed a very poor assessment of the aircraft, especially in respect of the tail flutter situation. By the time production deliveries could begin in October 1942 the entire batch had been taken over the by the USAAF, after a series of long and bitter negotiations on the British decision to cancel approximately $15 million worth of orders.

The next variant to come off the line was the P-38E. This differed from the D version in that it had different armament configuration featuring four 0.50in machine guns with 500 rounds per gun (rpg) and a 20mm Hispano cannon with 150 rounds in place of the previous 37mm Oldsmobile cannon tested on the P-38D. This version also had improved electric and hydraulic systems and was fitted with radio. The run of 210 P-38Es was followed by the P-38F that differed from its predecessor in having a further engine upgrade, racks inboard of the engines for external fuel tanks or a total of 2,000lb of bombs. Production of this variant totalled 527 examples of which 20 were converted to F-4A fitted with cameras for photo reconnaissance duties. The P-38G that followed the 'F' was fitted with the more powerful Allison that could produce 1,400hp each; 1,462 of this version were produced. Engines for the P-38H provided 1,425hp, while this version featured improve 20mm cannon and an increase of bomb payload to a total of 3,200lb. P-38Fs and -38Hs were also field modified into F-4As and F-5As respectively with the installation of a camera nose in place of the armament bay.

The first Lightnings to score combat victories were two P-38Es of 55th Fighter Group when they shot down two Japanese Kawanishi H6K4s whilst deployed in the defence of the Aleutians in Alaska. By that time the Lightning was also being deployed in Europe, arriving in the UK during August 1942. Most of these early arrivals were despatched to North Africa where they were in action by mid November primarily assigned to bomber escort missions. In air-to-air combat the P-38 gave great proof of its offensive capability as much as its ability to withstand punishment. As the tide of battle

Orlando, Florida - Lockhead P-38H Lighting, S/No. 42-66923 carrying bombs on the inner wing pylons (USAF)



Splendid shot of a P-38L-5-LO Lightning showing to advantage the way the 'silver' scheme was applied; note that wingtips and wing leading edges, together with parts of the booms and tail unit are finished in ACME Grey Surfacer while the rest of the airframe was left in natural metal (Lockheed)

in North Africa began to turn in favour of the Allies in Spring 1943, the P-38s could join other aircraft in attacks against Axis transport aircraft ferrying supplies to the beleagured Afrika Korps. With the total victory in Africa the Lightning units of the USAAF were transferred to support the landings of Operation Husky, the landings in Sicily, where they faced still opposition and during the first weeks of July 1943, 17 P-38s fell to the guns of Regia Aeronautica fighters.

Lightnings were deployed to cover British naval operations against Crete and at about the same time they entered service in the Pacific when 39th Fighter Squadron began to receive P-38s at Port Moresby, New Guinea. While the Lightning was receiving its baptism of fire in Europe, North Africa and the Pacific Lockheed had been at work to overcome some of the long-standing issues with the P-38 design. The result was an aircraft that differed considerably from the basic YP-38 concept. In an effort to overcoming engine-cooling problems Lockheed installed nacelles that were practically identical to those used on the Curtiss P-40F Warhawk onto its P-38E. This helped to move the intercooler radiators from the vulnerable wing leading edge to the chin position. Although this new version, soon to become known as the P-38J, utilised the same V-1710-89/91 engines as those of the 'H' model the newly-positioned coolers were found to be more efficient thus permitting a substantial increase in rated power. Space previously occupied by the intercoolers in the wing leading edges were used to fit a 55-gallon fuel tank thus increasing the Lightning's range. Such was the success of this variant that production of this model totalled 2,970 examples. The final stage of the evolution of the P-38 was the introduction of the Allison V-1710-111/113 engines for the 'L' model of which 3,810 examples were built. Between the 'J' and the 'L' there was, obviously a 'K' which was intended to be powered by a much more up-rated engine but the project was abandoned after test flying of only one aircraft.

The last designated variant was the P-38M that was an adaptation of the Lightning as a night fighter. Suitably modified, the aircraft could carry a radar operator seated above the wing centre section, behind the pilot. Most of these were modified P-38Ls fitted with conical flash guards on the guns and carrying an AN/APS-6 radar pod below the nose. Among several of the field modifications made to Lightnings was that known as 'droopsnoot'. They featured a bulbous glazed nose housing a Norden bombsight, or an H2X 'bombing through overcast' radar, and were used as pathfinders to lead a formation of standard P-38s; the release of the 'droopsnoot's bombs was a signal for the entire formation to release its load.

There was only one projection by Lockheed that hardly materialised, that of export orders. As already explained above, what was to be the major acquirer – the RAF – cancelled all its orders. With the progression of the war, and as former 'foes' joined the Allies in the final part of the conflict, some P-38s began to be handed over to other air arms. Among these one finds France and Italy. Two F-4 Lightnings were acquired on loan from the 8th Air Force USAAF for Royal Australian Air Force (RAAF) service with No.1 Photographic Reconnaissance Unit. A55-1 was written off in an accident at Coomalie Creek in August 1944 and a third exampled was received at Eagle Farm in February 1943.

With the end of the Second World War the USAAF had thousands of P-38s for disposal and among the beneficiaries was Italy's newly formed air force, the Aeronautica Militare Italiana, in the form of 100 P-38Ls and F-5s acquired in April 1946. These served with the 3° and 4° Stormi well up to 1956, although at least 30 P-38s were lost in accidents, most of which were fatal. Twelve P-38s were acquired by Honduras and 15 by China. The Dominican Republic received six F-5s and two two-seat P-38s in 1947. Domestic sales at around $1,200 apiece made it a popular acquisition and individuals or entities in the United States operated several examples were in the most varied of roles.

The P-38 Lightning was a formidable fighter aircraft. Its ability to protect bombers that it escorted was outstanding. It enjoyed formidable respect in Luftwaffe and Japanese air force circles and many times enemy aircraft failed to attack bomber formations through the intervention of escorting P-38s. The Lightning was also the only aircraft in the United States that was in production both when the war began and when it ended. In fact, the P-38 admirably fulfilled its role as a fighter; its twin-boom configuration exposed as little as possible of its airframe to enemy fire, it protected its pilot and returned him home to fight again. ■

Lockheed Mk I (L-322-61) Lightning, AE979, acquired for evaluation and tested at Boscombe Down during spring 1942. Dark Earth/Dark Green/Sky finish with white serial; 'B' type roundels above wings

Lockheed P-38D Lightning, 67/IP, 1st Pursuit Group, November 1941, Carolina Manouvres. Olive Drab/Neutral Grey finish with national markings on fin booms and above port wing; underside of outer wing panels painted in white distemper. Red exercise crosses marked on nose and below wings

Lockheed P-38F Lightning, 92/HV•E, 27th Fighter Squadron, 1st Fighter Group, 1943. Olive Drab upper surfaces with Neutral Grey undersides. Red spinner, white codes and yellow surround to the star insignia on fuselage. Note also small United States flag under the wing, outboard of the landing light. The code '92' is believed to be of the previous unit, the 78th Fighter Group, when it served in England

Lockheed P-38G Lightning, captured aftern landing at Cagliari on 12th June 1943, flown by the Regia Aeronautica (Col. Angelo Tandi). Olive Drab/Neutral Grey finish with all US markings overpainted in Italian Verde Oliva Scuro; black fasces wing markings in four positions. White tip of spinner and cross on tail

PROFILES 1:48 Scale

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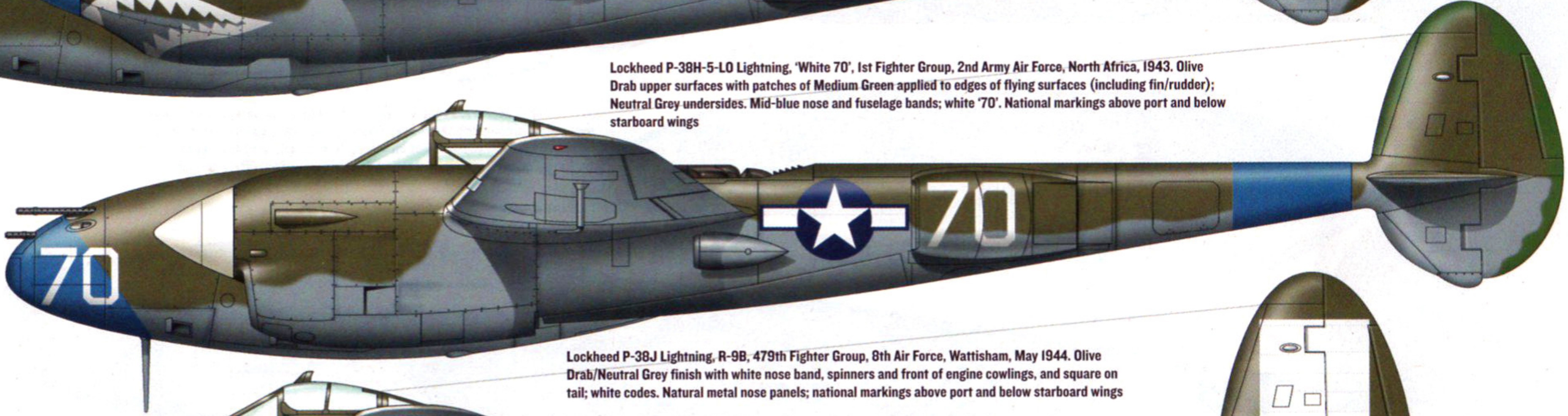
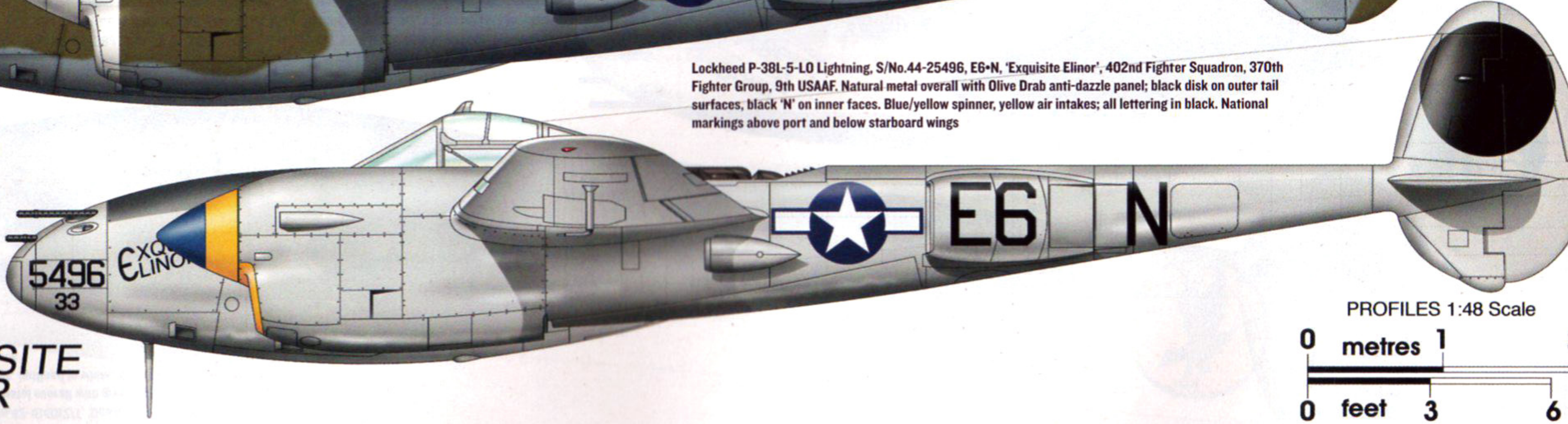
Lockheed P-38F-5-LO, S/No.42-12654/30, 'Regina I', flown by Lt P. Stanch, 39th Fighter Squadron, 35th Fighter Group, Port Moreshby, January 1943. Olive Drab/Neutral Grey finish with middle blue spinner; all lettering in white. National markings on tail booms, above port and below starboard wings

Lockheed P-38H-5-LO Lightning, 'White 70', 1st Fighter Group, 2nd Army Air Force, North Africa, 1943. Olive Drab upper surfaces with patches of Medium Green applied to edges of flying surfaces (including fin/rudder); Neutral Grey undersides. Mid-blue nose and fuselage bands; white '70'. National markings above port and below starboard wings



Lockheed P-38J Lightning, R-9B, 479th Fighter Group, 8th Air Force, Wattisham, May 1944. Olive Drab/Neutral Grey finish with white nose band, spinners and front of engine cowlings, and square on tail; white codes. Natural metal nose panels; national markings above port and below starboard wings

Lockheed P-38L-5-LO Lightning, S/No.44-25496, E6•N, 'Exquisite Elinor', 402nd Fighter Squadron, 370th Fighter Group, 9th USAAF. Natural metal overall with Olive Drab anti-dazzle panel; black disk on outer tail surfaces, black 'N' on inner faces. Blue/yellow spinner, yellow air intakes; all lettering in black. National markings above port and below starboard wings



EXQUISITE
ELINOR

PROFILES 1:48 Scale

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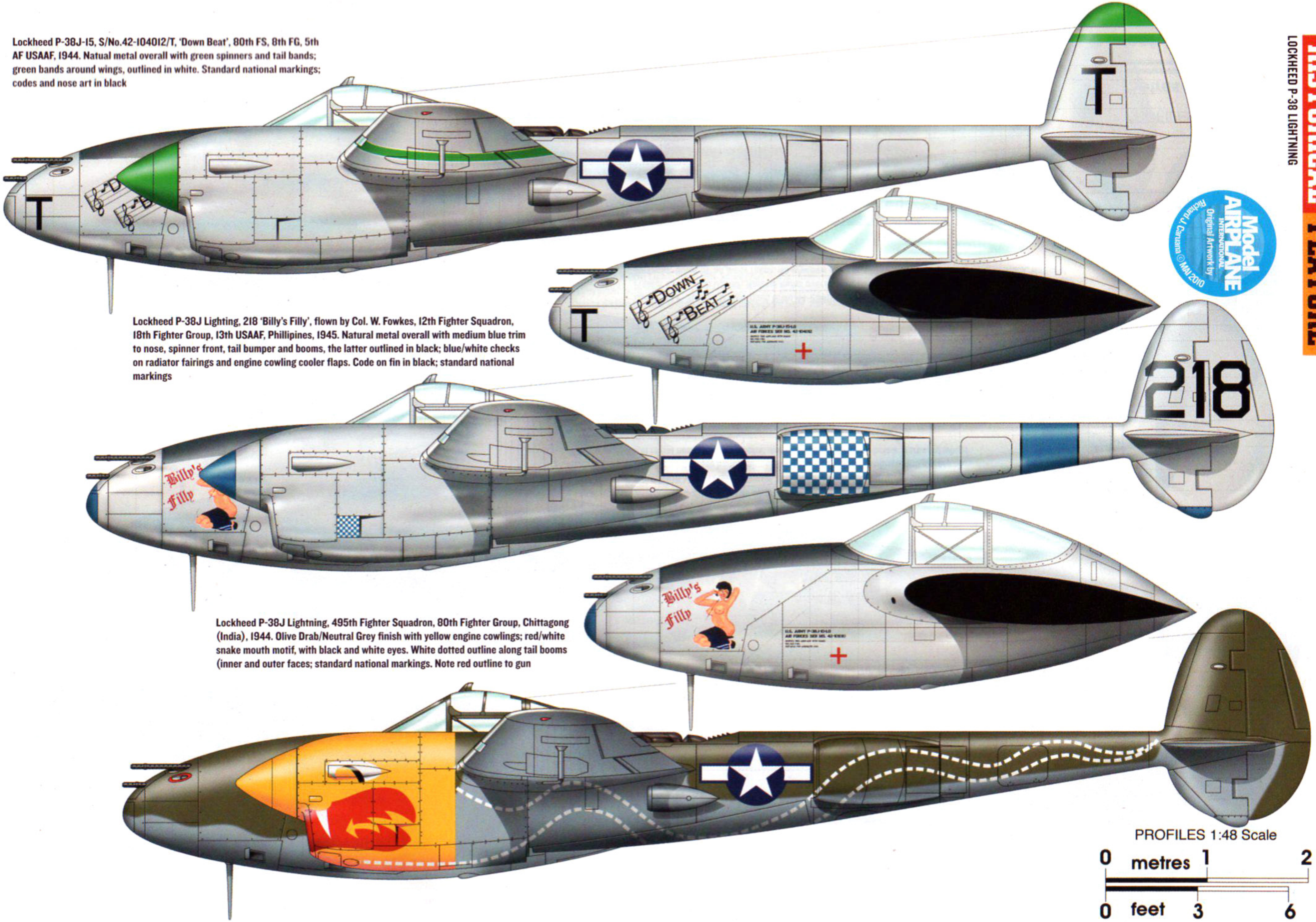
Lockheed P-38J-15, S/No.42-104012/T, 'Down Beat', 80th FS, 8th FG, 5th AF USAAF, 1944. Natual metal overall with green spinners and tail bands; green bands around wings, outlined in white. Standard national markings; codes and nose art in black

Lockheed P-38J Lighting, 218 'Billy's Filly', flown by Col. W. Fowkes, 12th Fighter Squadron, 18th Fighter Group, 13th USAAF, Phillipines, 1945. Natural metal overall with medium blue trim to nose, spinner front, tail bumper and booms, the latter outlined in black; blue/white checks on radiator fairings and engine cowling cooler flaps. Code on fin in black; standard national markings

Lockheed P-38J Lightning, 495th Fighter Squadron, 80th Fighter Group, Chittagong (India), 1944. Olive Drab/Neutral Grey finish with yellow engine cowlings; red/white snake mouth motif, with black and white eyes. White dotted outline along tail booms (inner and outer faces; standard national markings. Note red outline to gun



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PROFILES 1:48 Scale

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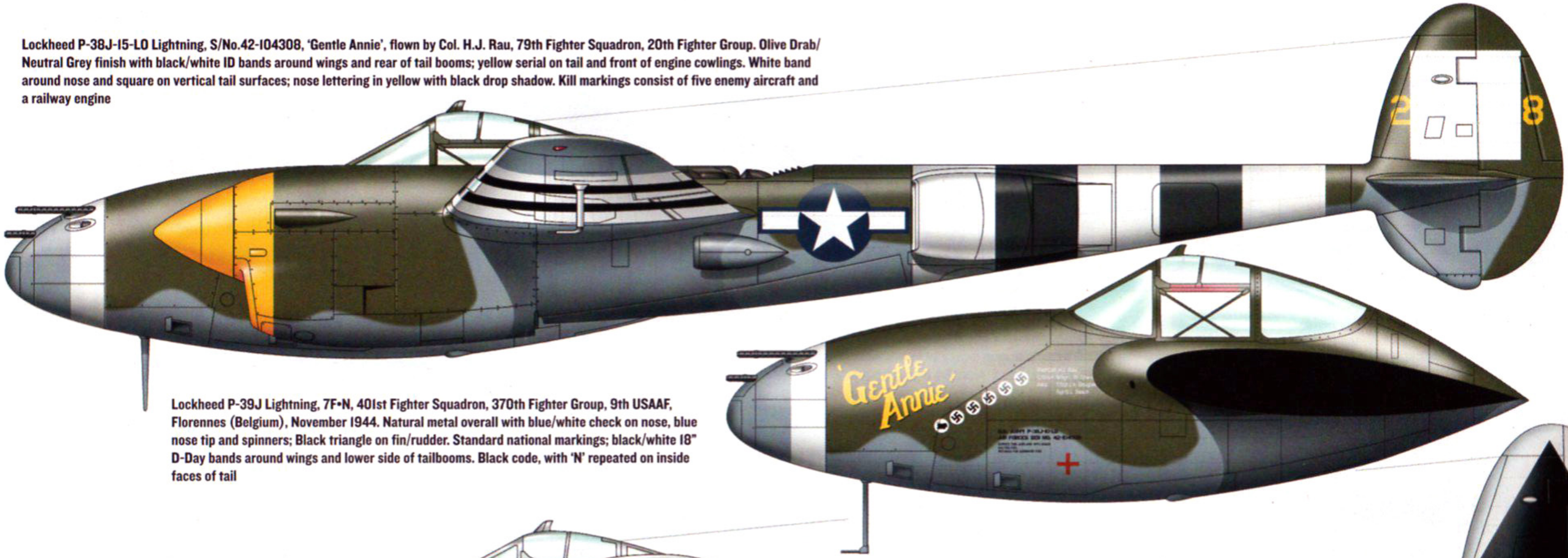
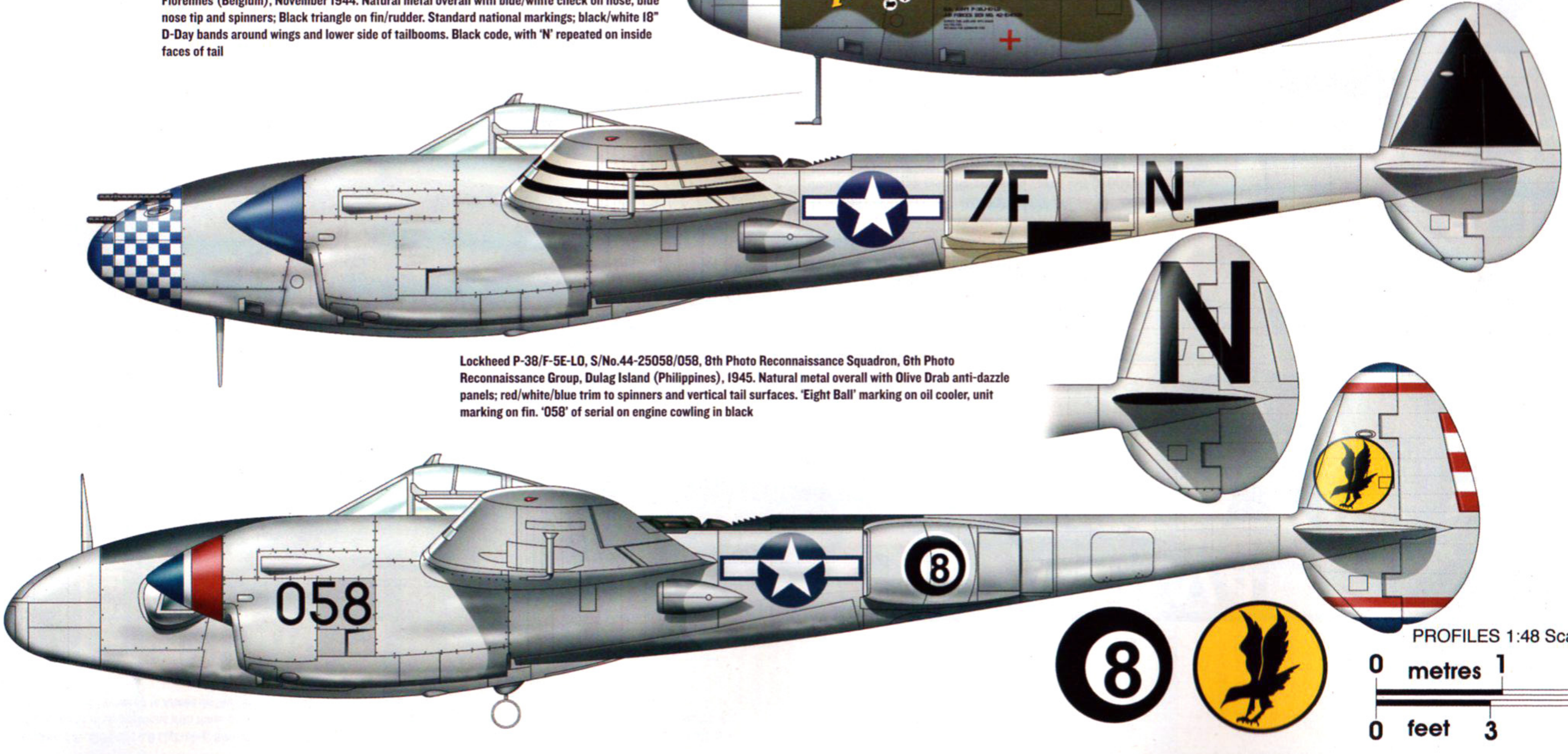
Lockheed P-38J-15-LO Lightning, S/No.42-104308, 'Gentle Annie', flown by Col. H.J. Rau, 79th Fighter Squadron, 20th Fighter Group. Olive Drab/Neutral Grey finish with black/white ID bands around wings and rear of tail booms; yellow serial on tail and front of engine cowlings. White band around nose and square on vertical tail surfaces; nose lettering in yellow with black drop shadow. Kill markings consist of five enemy aircraft and a railway engine



Lockheed P-39J Lightning, 7F•N, 401st Fighter Squadron, 370th Fighter Group, 9th USAAF, Florennes (Belgium), November 1944. Natural metal overall with blue/white check on nose, blue nose tip and spinners; Black triangle on fin/rudder. Standard national markings; black/white 18" D-Day bands around wings and lower side of tailbooms. Black code, with 'N' repeated on inside faces of tail



Lockheed P-38/F-5E-LO, S/No.44-25058/058, 8th Photo Reconnaissance Squadron, 6th Photo Reconnaissance Group, Dulag Island (Philippines), 1945. Natural metal overall with Olive Drab anti-dazzle panels; red/white/blue trim to spinners and vertical tail surfaces. 'Eight Ball' marking on oil cooler, unit marking on fin. '058' of serial on engine cowling in black

PROFILES 1:48 Scale

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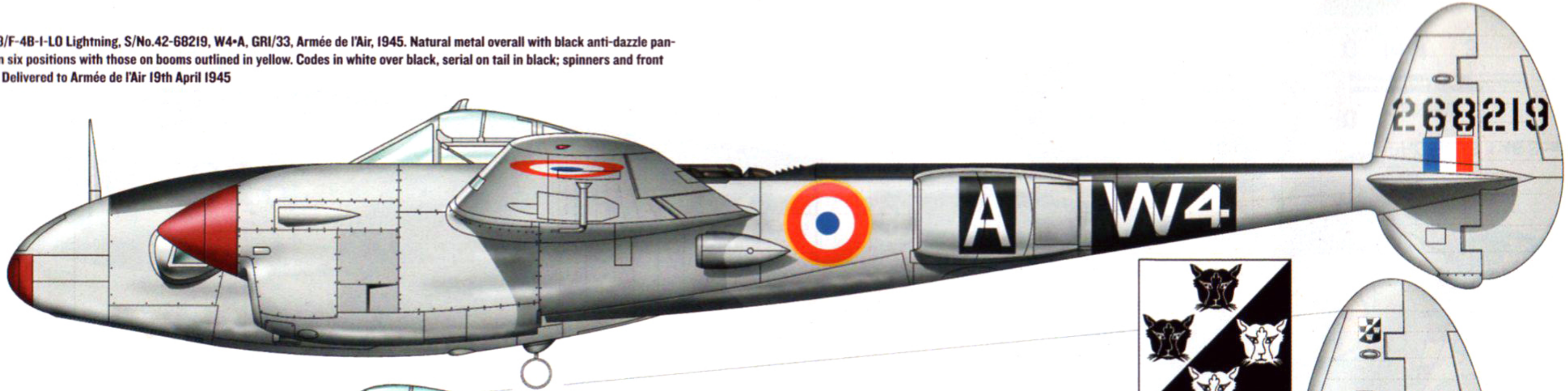
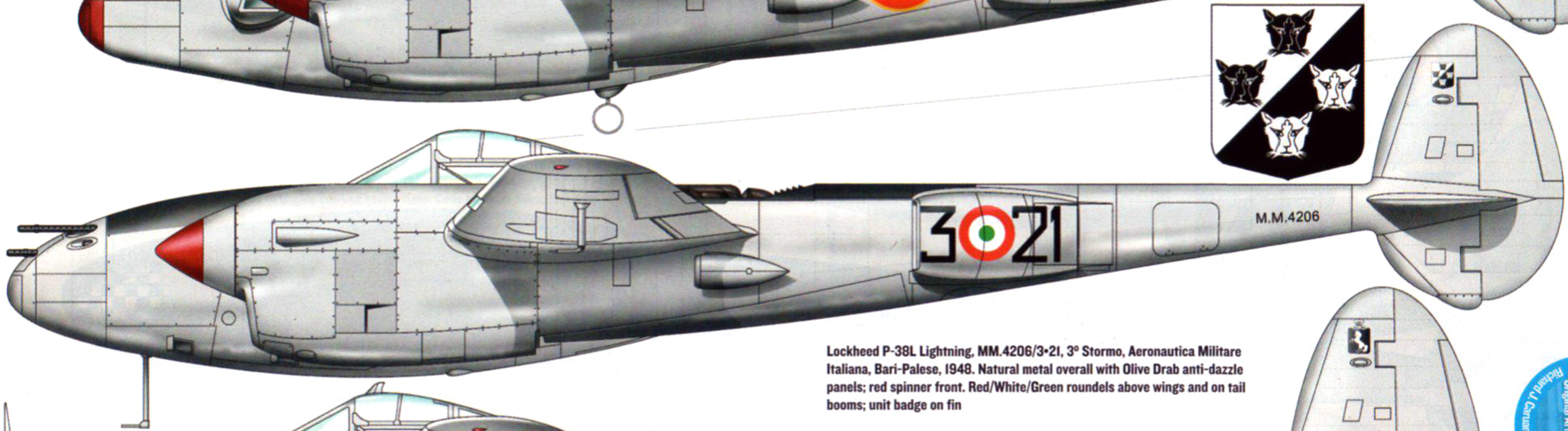
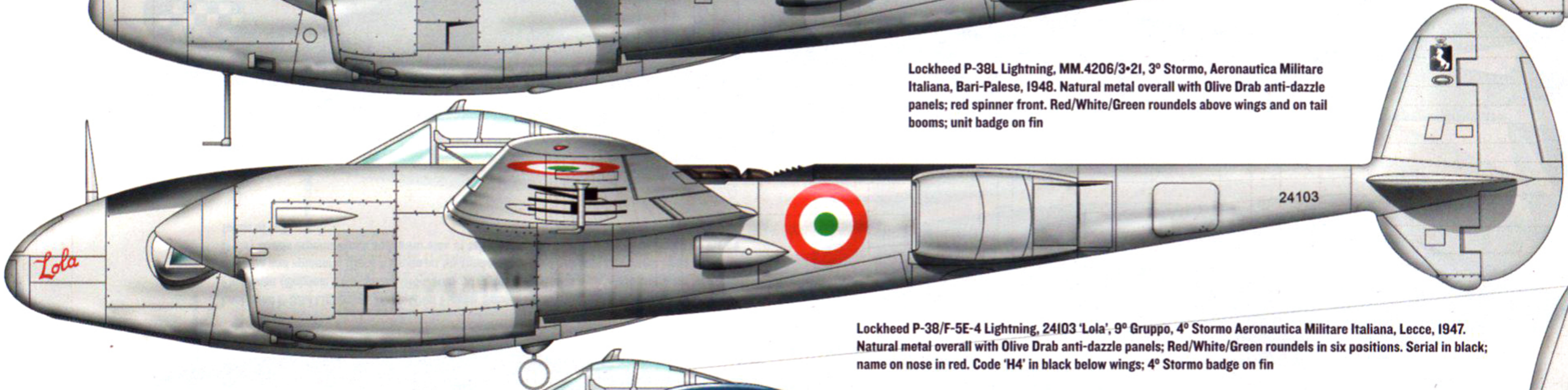
Lockheed P-38/F-4B-1-LO Lightning, S/No.42-68219, W4•A, GRI/33, Armée de l'Air, 1945. Natural metal overall with black anti-dazzle panels; roundels in six positions with those on booms outlined in yellow. Codes in white over black, serial on tail in black; spinners and front of nose in red. Delivered to Armée de l'Air 19th April 1945

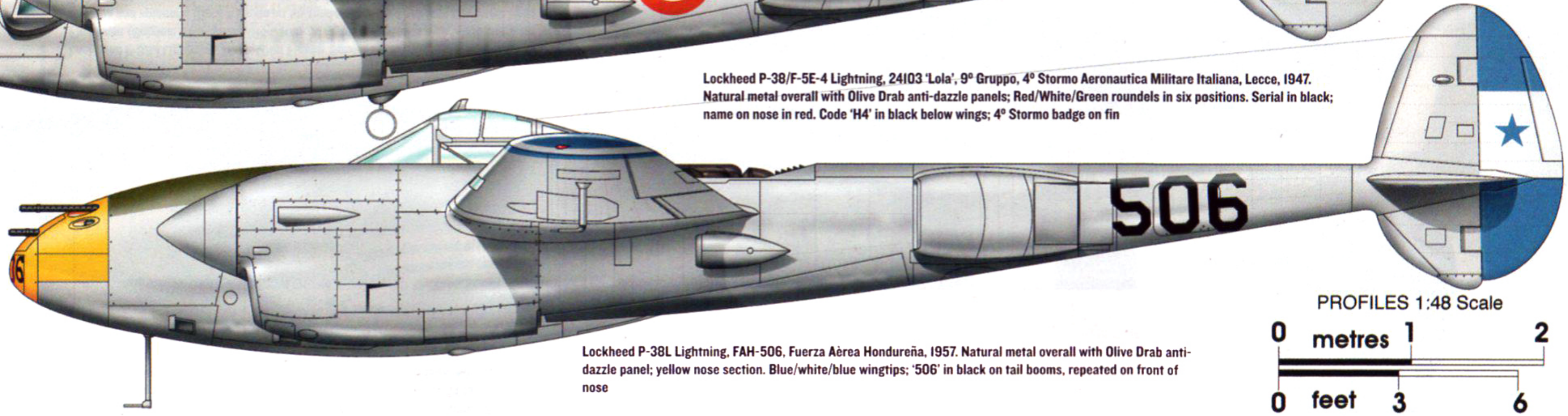




Lockheed P-38L Lightning, MM.4206/3•21, 3º Stormo, Aeronautica Militare Italiana, Bari-Palese, 1948. Natural metal overall with Olive Drab anti-dazzle panels; red spinner front. Red/White/Green roundels above wings and on tail booms; unit badge on fin



Lockheed P-38/F-5E-4 Lightning, 24103 'Lola', 9º Gruppo, 4º Stormo Aeronautica Militare Italiana, Lecce, 1947. Natural metal overall with Olive Drab anti-dazzle panels; Red/White/Green roundels in six positions. Serial in black; name on nose in red. Code 'H4' in black below wings; 4º Stormo badge on fin



Lockheed P-38L Lightning, FAH-506, Fuerza Aèrea Hondureña, 1957. Natural metal overall with Olive Drab anti-dazzle panel; yellow nose section. Blue/white/blue wingtips; '506' in black on tail booms, repeated on front of nose

PROFILES 1:48 Scale

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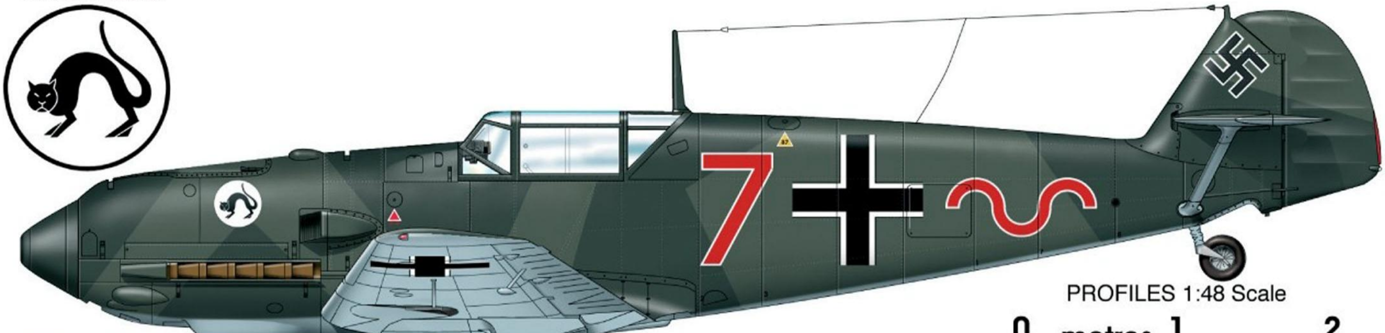
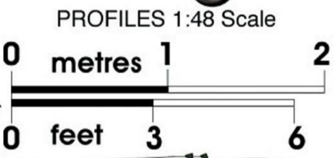
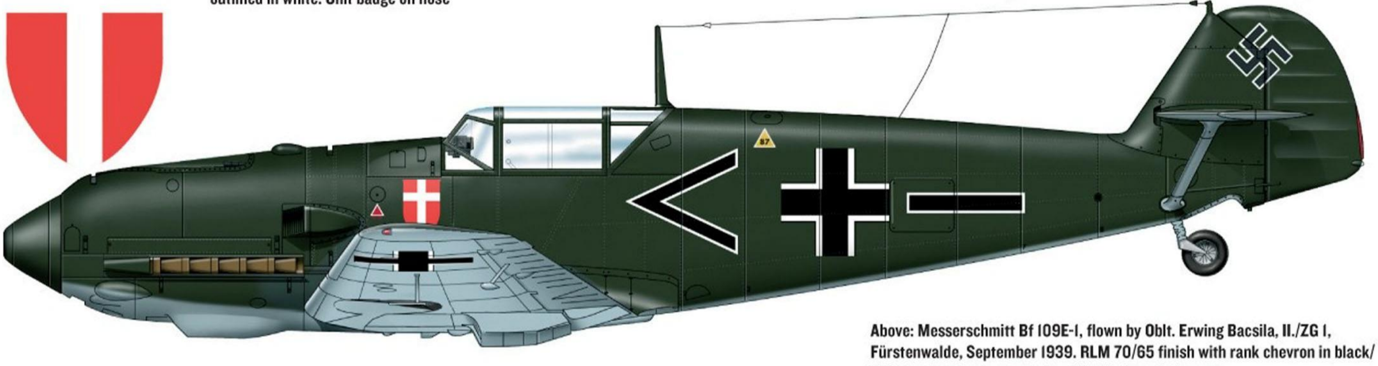


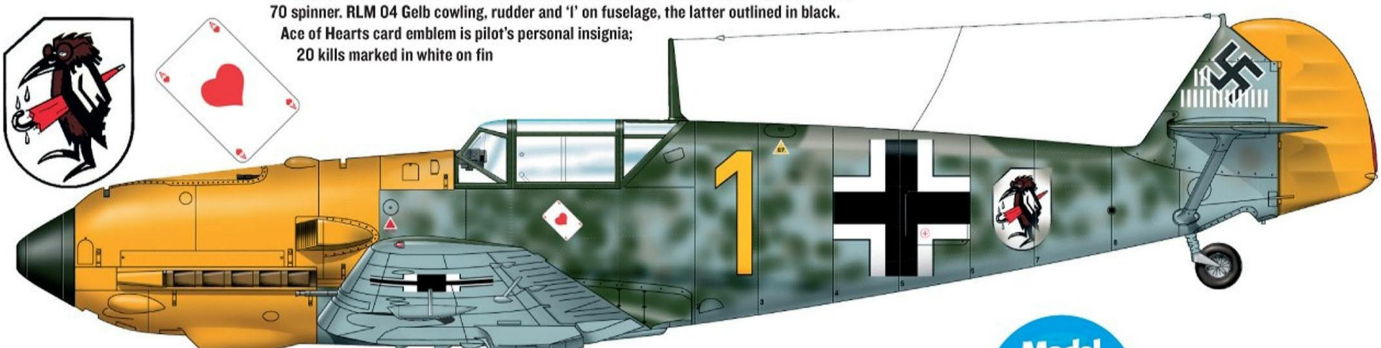


Above: Messerschmitt Bf 109E-1, W/Nr.4072, flown by Hauptmann Hannes Trautloft, Staffelkapitän of 2./JG 77, September 1939. RLM 70/71/65 finish with standard contemporary national markings; red '7' and marking aft of fuselage cross, outlined in white. Unit badge on nose



Above: Messerschmitt Bf 109E-1, flown by Oblt. Erwing Bacsila, II./ZG 1, Fürstenwalde, September 1939. RLM 70/65 finish with rank chevron in black/white on fuselage; personal emblem below windscreen

Below: Messerschmitt Bf 109E-3, 6./JG51, flown by Staffelkapitän Josef 'Pips' Priller, Autumn 1940. RLM 71/02/65 scheme with RLM 71 and 02 mottling on fuselage sides; RLM 70 spinner. RLM 04 Gelb cowling, rudder and '1' on fuselage, the latter outlined in black. Ace of Hearts card emblem is pilot's personal insignia; 20 kills marked in white on fin



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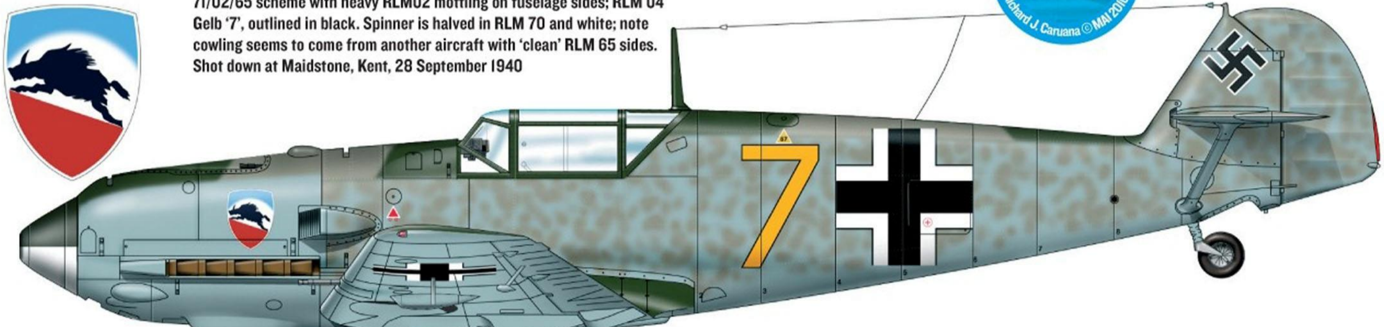
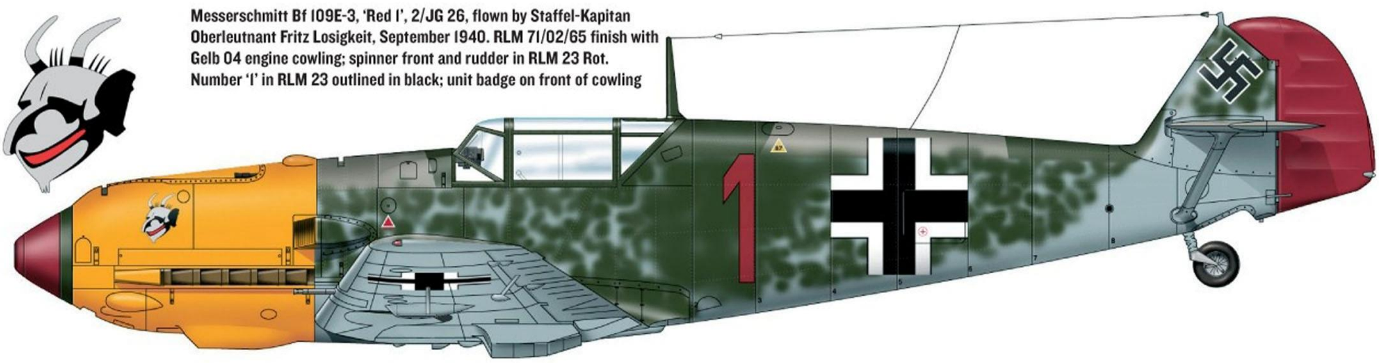
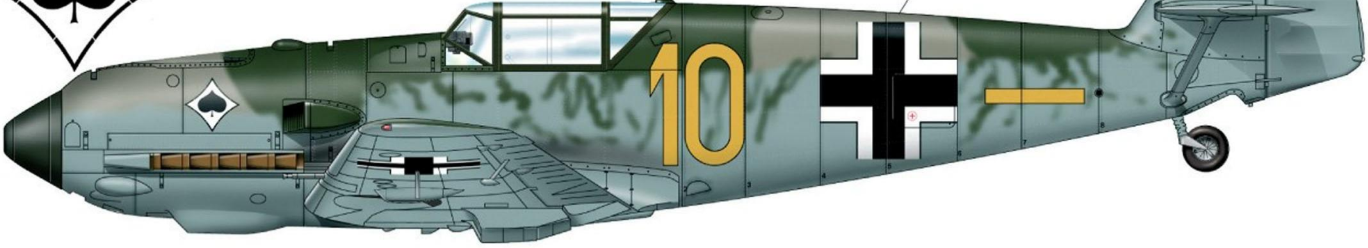
Messerschmitt Bf 109E-3, I./JG 52 based at Laon-Couvron (France). RLM 71/02/65 scheme with heavy RLM02 mottling on fuselage sides; RLM 04 Gelb '7', outlined in black. Spinner is halved in RLM 70 and white; note cowling seems to come from another aircraft with 'clean' RLM 65 sides. Shot down at Maidstone, Kent, 28 September 1940



Messerschmitt Bf 109E-3, 'Red 1', 2/JG 26, flown by Staffel-Kapitan Oberleutnant Fritz Losigkeit, September 1940. RLM 71/02/65 finish with Gelb 04 engine cowling; spinner front and rudder in RLM 23 Rot. Number '1' in RLM 23 outlined in black; unit badge on front of cowling

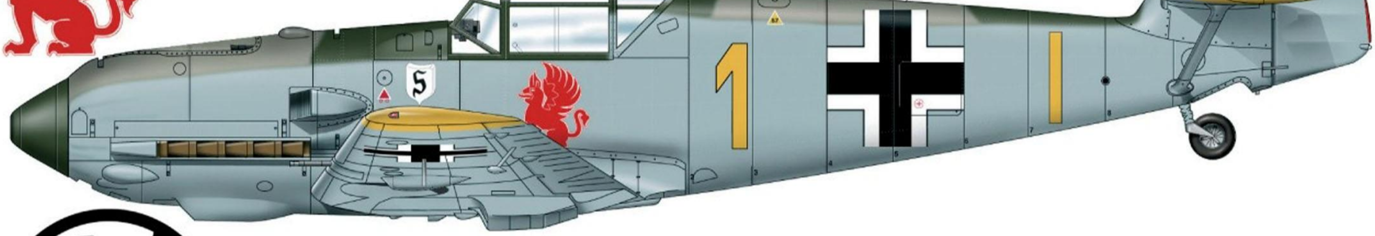


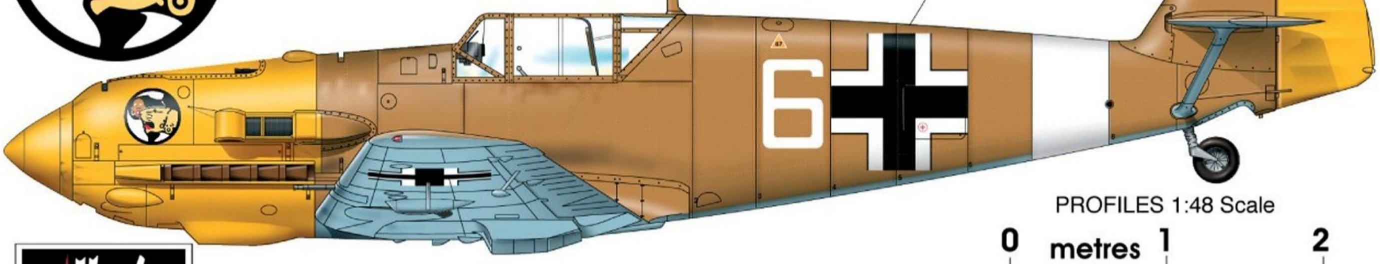
Messerschmitt Bf 109E-3, Yellow 10 of 6./JG 53, France, 1940. RLM 71/02/65 finish. Spinner in RLM 70. '10' and horizontal bar on fuselage are RLM 27 Gelb, outlined black

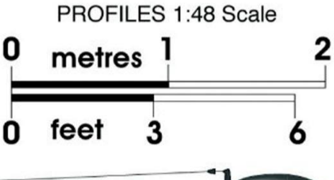


Messerschmitt Bf 109E, 2./JG3. RLM 71/02/65 scheme with RLM 04 wing, tailplane and rudder tips; black '13' with white and black outline. Spinner is white with three yellow stripes

Messerschmitt Bf 109E-4 'Yellow 1', flown by Oberleutenant Gerhard Schöpel, Staffelkapitän of 9./JG 26 'Schlagater', based at Caffiers (France), August 1940. . RLM 71/02/65 finish with RLM 04 '1' and vertical bar, outlined in black. RLM 04 wingtips, tailplane tips and top of rudder; 12 victories on rudder



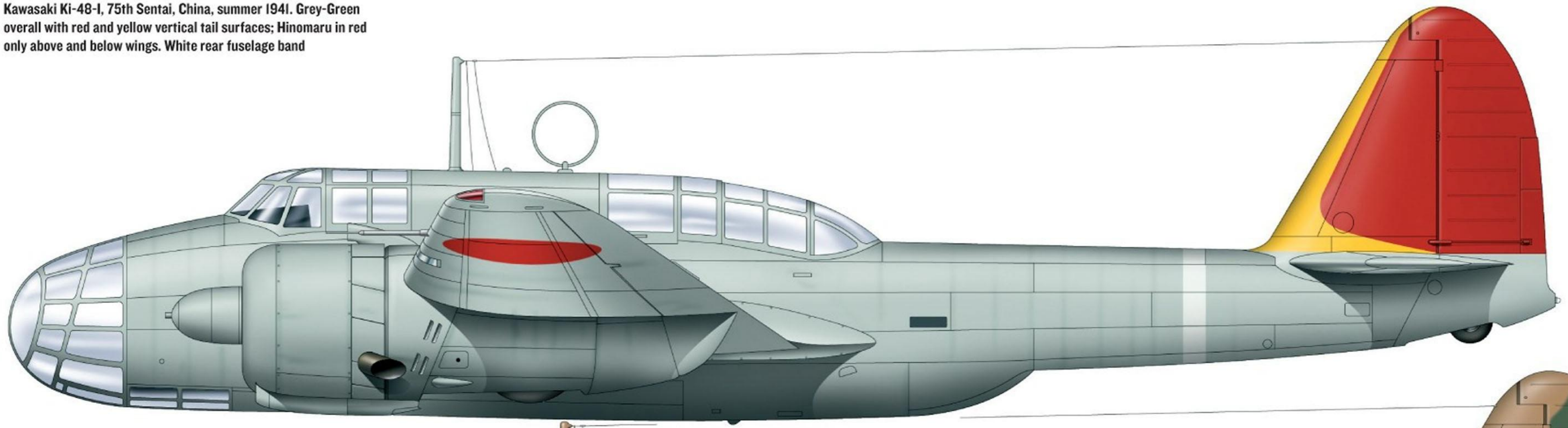




Above: Messerschmitt Bf 109E-4/Trop of JG.27, 1941. The aircraft is finished in RLM 79 on all the top surfaces with RLM 78 on the undersides. Nose area and fin are in RLM 04 Gelb while the individual number '6' is in RLM 21, as is the rear fuselage band

Messerschmitt Bf 109E-4, G9+JM of III./NJG 1. Black overall with RLM 77 code, except for 'J' which is RLM 23 Rot outlined in white. Spinner tip is also RLM 23

Kawasaki Ki-48-I, 75th Sentai, China, summer 1941. Grey-Green overall with red and yellow vertical tail surfaces; Hinomaru in red only above and below wings. White rear fuselage band

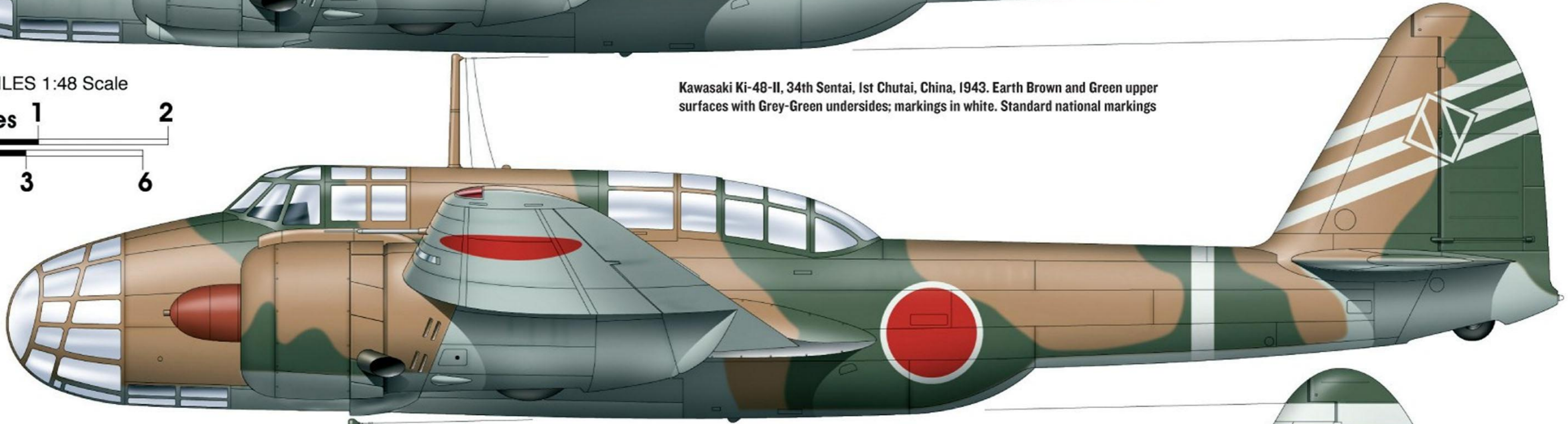


PROFILES 1:48 Scale

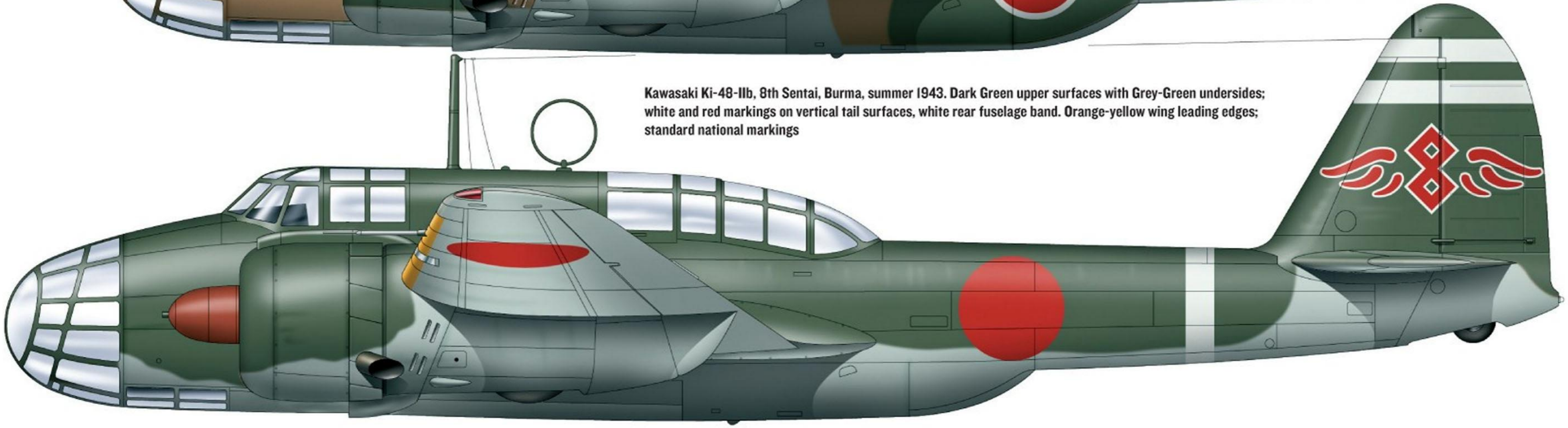
0 metres 1 2

0 feet 3 6

Kawasaki Ki-48-II, 34th Sentai, 1st Chutai, China, 1943. Earth Brown and Green upper surfaces with Grey-Green undersides; markings in white. Standard national markings



Kawasaki Ki-48-IIb, 8th Sentai, Burma, summer 1943. Dark Green upper surfaces with Grey-Green undersides; white and red markings on vertical tail surfaces, white rear fuselage band. Orange-yellow wing leading edges; standard national markings



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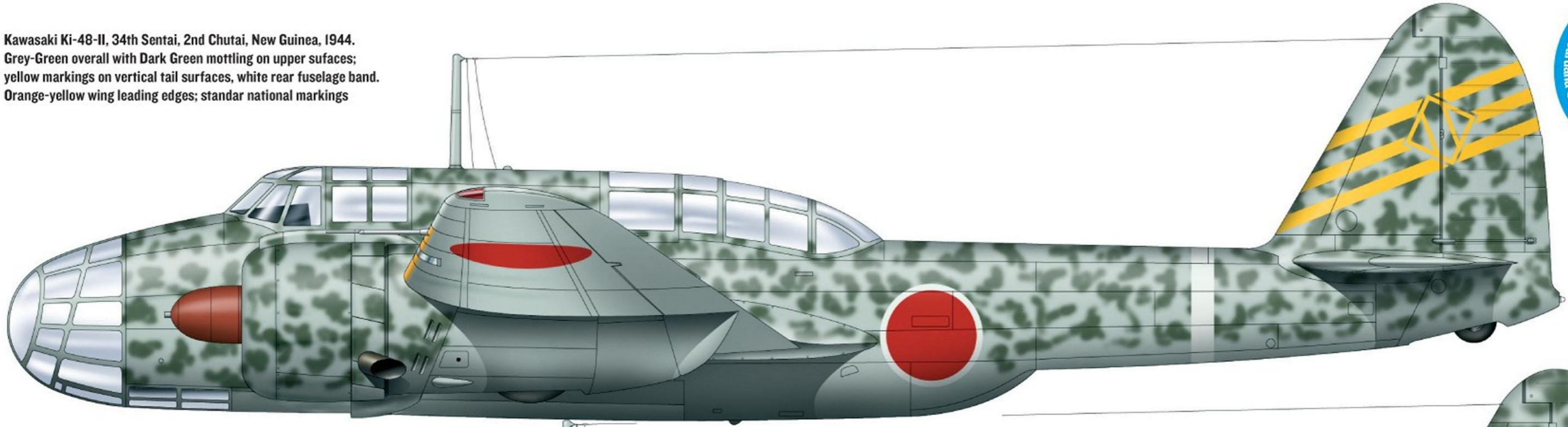
Kawasaki Ki-48-II, 34th Sentai, 2nd Chutai, New Guinea, 1944.
Grey-Green overall with Dark Green mottling on upper sufaces;
yellow markings on vertical tail surfaces, white rear fuselage band.
Orange-yellow wing leading edges; standar national markings



PROFILES 1:48 Scale

0 metres 1 2

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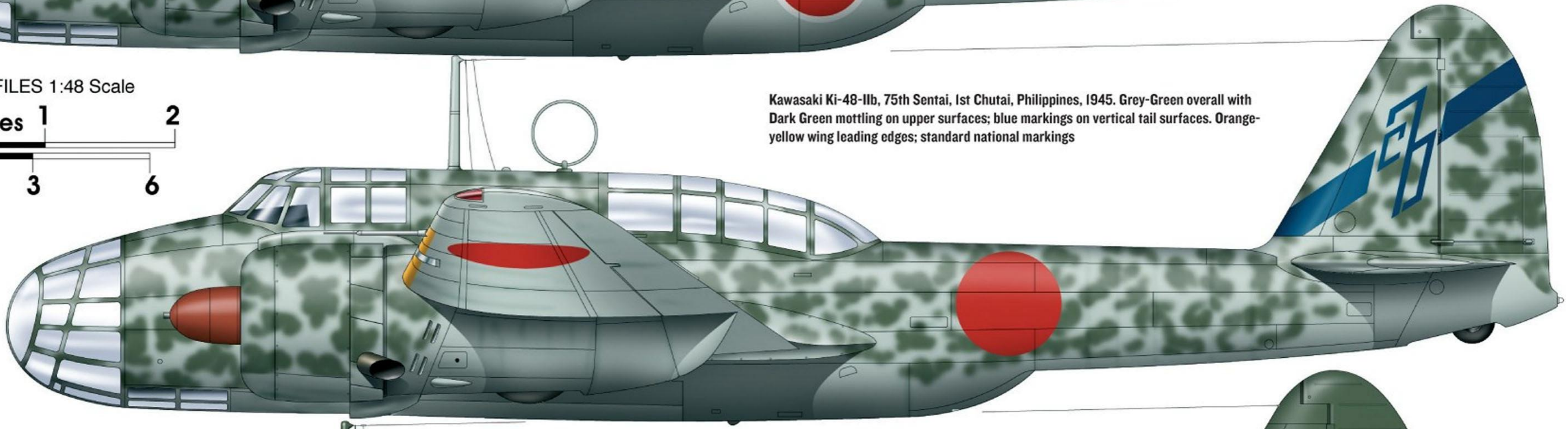
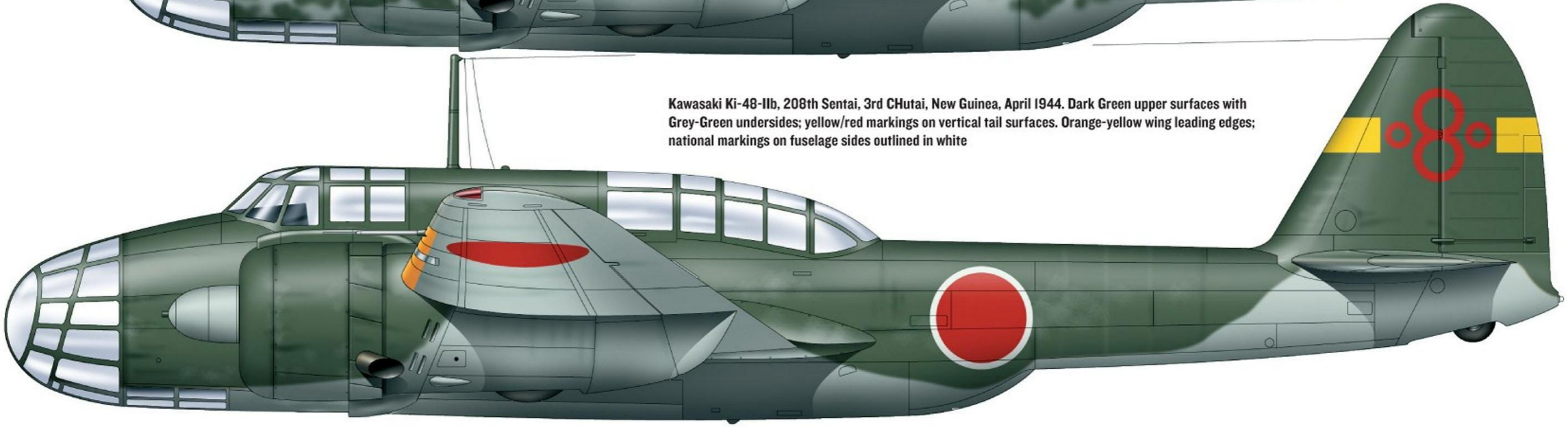
Kawasaki Ki-48-IIb, 75th Sentai, 1st Chutai, Philippines, 1945. Grey-Green overall with Dark Green mottling on upper surfaces; blue markings on vertical tail surfaces. Orange-yellow wing leading edges; standard national markings



Kawasaki Ki-48-IIb, 208th Sentai, 3rd CHutai, New Guinea, April 1944. Dark Green upper surfaces with Grey-Green undersides; yellow/red markings on vertical tail surfaces. Orange-yellow wing leading edges; national markings on fuselage sides outlined in white



Two-seat Voodoo S/No.56-0244/FB-244 was the first production aircraft of the F-101F-51-MC batch and is seen here undergoing testing with the Air Research and Development Command [ARDC] (McDonnell Douglas)

THE "ONE-OH-WONDER"

The McDonnell F-101 Voodoo

Among the Century Series of fighters that appeared in the United States during the late 1950s and early 1960s the F-101 Voodoo has for some reason been overshadowed by its contemporaries. It was one of the first operational supersonic fighters to enter United States Army Air Force (USAAF) service and proved to be highly adaptable to other roles, such as that of photo-reconnaissance, which provided such sterling service during operations in Vietnam.

After the end of the Second World War it became clear to the USAAF that it had to make up for lost time in the development and production of jet-powered aircraft and engines. Even when massive investments had been made in this innovative means of propulsion early jet-powered fighters designed and produced for the USAF suffered – like most contemporary jet aircraft – of limited range. Although this did not matter much when such fighters were operating in the interception role, the equally important role of escort to strategic bombers was beyond their reach.

So in 1946 three companies were selected to design and build a long-range fighter to fill such a gap in the USAAF's inventory, with North American submitting the YP-39 (an F-86 Sabre derivative), Lockheed presenting the XP-90 (a highly modified F-80 Shooting Star) and McDonnell proposing the XP-88. While both North American and Lockheed had been building and providing the USAAF with fighters for many years, McDonnell's only experience in the jet-fighter field consisted of the FH-1 Phantom for the United States Navy (USN).

McDonnell's design team led by Edward M. 'Bud' Flesh worked to contract AC-14582 to build two prototypes of the XP-88, a design that immediately appeared to be the most promising project among those presented by the three aviation companies. Bud's design featured a beautifully streamlined fuselage having plenty of space for fuel cells required for the long-range interception role and was powered by a pair of Westinghouse J34-WE-13 turbojets providing 3,000 lbf thrust each. The low-mounted wings had a sweepback of 35° while the sweptback tailplane was fitted about a third of the way up on the vertical tail surfaces. Armament was to consist of six 20mm cannon.

With the change of USAAF to United States Air Force (USAF) in 1947 also came the change of nomenclature for some of its aircraft, such as 'Pursuit' being replaced by 'Fighter'. That brought the era of the 'P' prefix to an end, as US existing and future aircraft were now to use the prefix 'F'; thus McDonnell's prototypes' designation was changed to XF-88. The first of the two prototypes (46-6525) flew for the first time at Muroc on 20 October 1948 with company test pilot Robert Eldhom at the controls. Initial tests were something of a disappointment, with the new fighter attaining a top speed of 640mph at sea level. Fault was traced to the Westinghouse engines; this company had fallen behind contemporary jet engine development and its J34s proved decidedly underpowered. Uprated engines fitted with afterburners on the second prototype (redesignated XF-88A) that provided an extra 600lbf of thrust helped only to declare this aircraft as winner of the fly-off but a major rethink of USAF strategies, especially its Penetration Fighter Program of 1950 and analysis of operational missions being flown in Korea, meant that a new Weapons System requirement was issued.

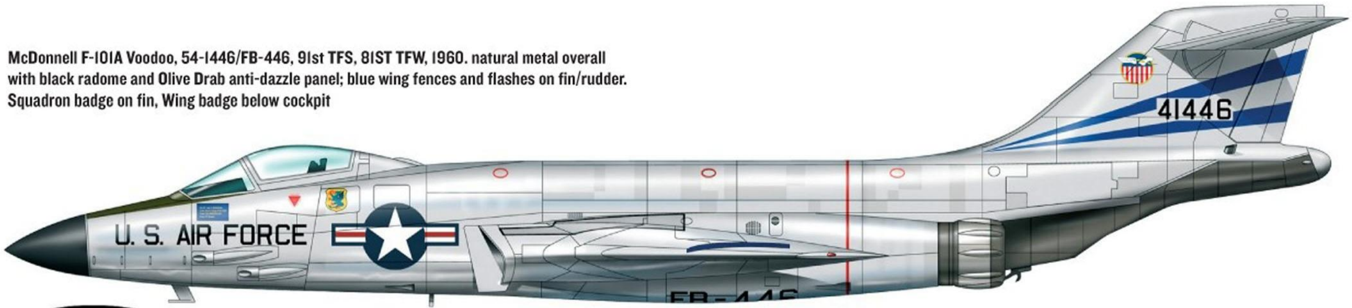
Meanwhile McDonnell had further updated its XF-88A in 1949 by installing an Allison XT38A turboprop engine of 2,500 shp in the nose in addition to the J34s. Designated XF-88B it performed its first flight on 14 April 1953. The third engine only served to draw more fuel from the existing load thus cutting down considerably on the aircraft's endurance. This prototype was retained by the USAF and the US National Advisory Committee on Aeronautics (NACA) to evaluate high speed propellers well into 1956 until both XF-88A and XF-88B were consigned to the scrap heap.

Working on the new specifications issued in 1951 for a long-range escort fighter under Weapons System (WS) 105A, Bud Flesh and his team redesigned and enlarged the XF-88 basic layout. McDonnell's submission, competing with others from Lockheed, North American, Northrop and Republic, was accepted in May 1951 with the designation being changed from F-88 to F-101 in November of the same year.

The larger overall dimensions of the F-101 were necessary to carry nearly three times the fuel load of its predecessor, and to accommodate the much larger Pratt & Whitney J57-P-13 turbojets each providing 11,700 lbf thrust. Engine air intakes were redesigned and the horizontal tail surfaces were moved higher up. Late in 1952 the mission for the F-101 was changed from that of 'Penetration Fighter' to 'Strategic Fighter' and equal importance was laid on escort and nuclear weapons delivery roles. USAF officials inspected the mock-up of the F-101 in March 1953. On 28 May the design was approved and an initial order was placed for 39 F-101As; no prototypes were required as this fighter was considered to be a development of the XF-88A, which in fact had been used as a trials platform to evaluate the new elements of the F-101A. On its maiden flight of 29 September 1954 piloted by Robert C. Little, 53-2418 recorded a maximum speed of Mach 1.4.

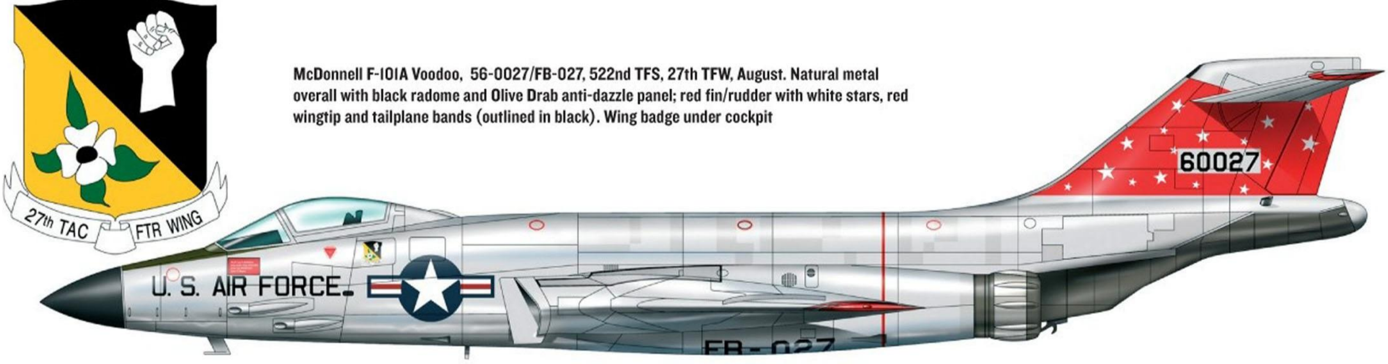
Armament of the F-101A consisted of four Colt M39 20mm cannon installed in the forward fuselage; a nuclear weapon could be carried on an external central ventral mounting. The MA-7 fire control system featured AN/APS-54 radar and the MA-2 'Low Altitude Bombing System' (LABS) that supported 'toss bombing'. With the end of the war in Korean and the development of the B-52 strategic bomber there was no more need for an escort fighter and Strategic Air Command (SAC) withdrew from the F-101 programme. Tactical Air Command (TAC) however recognised the qualities of the F-101 as a fighter-bomber and continued with the test programme between 1955 and 1956 and the introduction of no less than 2,300 modifications before full production was resumed towards the end of 1956.

The first of 77 F-101A production machines was delivered in May 1957 to the 27th Strategic Fighter Wing (SFW) where it replaced the F-84F Thunderstreak. With a performance of Mach 1.52 the large capacity of internal fuel permitted a range of around 3,000 miles, which could be further extended by carrying a pair of external fuel tanks of 450 US gallons each in parallel below the fuselage. Operationally one cannon was sometimes removed to make room for a TACAN beacon-receiver. Practically all F-101As – by that time known by the name of



McDonnell F-101A Voodoo, 54-1446/FB-446, 91st TFS, 81ST TFW, 1960. natural metal overall with black radome and Olive Drab anti-dazzle panel; blue wing fences and flashes on fin/rudder. Squadron badge on fin, Wing badge below cockpit

McDonnell F-101A Voodoo, 56-0027/FB-027, 522nd TFS, 27th TFW, August. Natural metal overall with black radome and Olive Drab anti-dazzle panel; red fin/rudder with white stars, red wingtip and tailplane bands (outlined in black). Wing badge under cockpit



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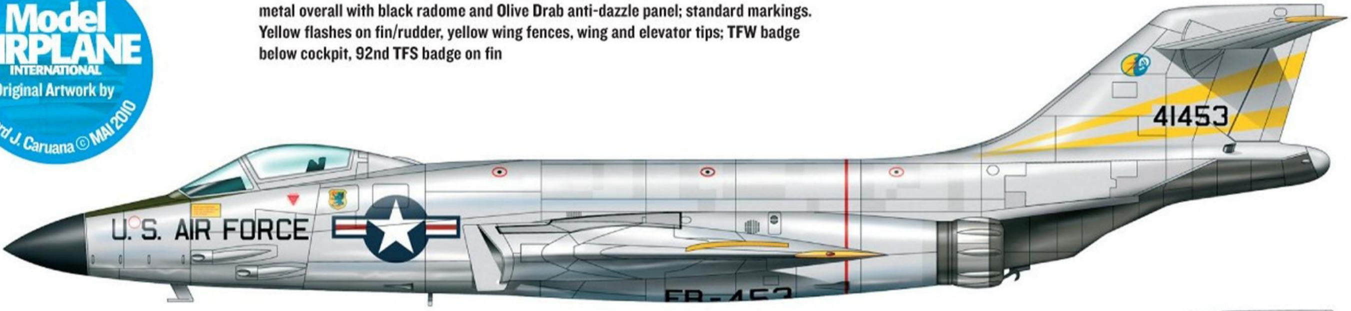
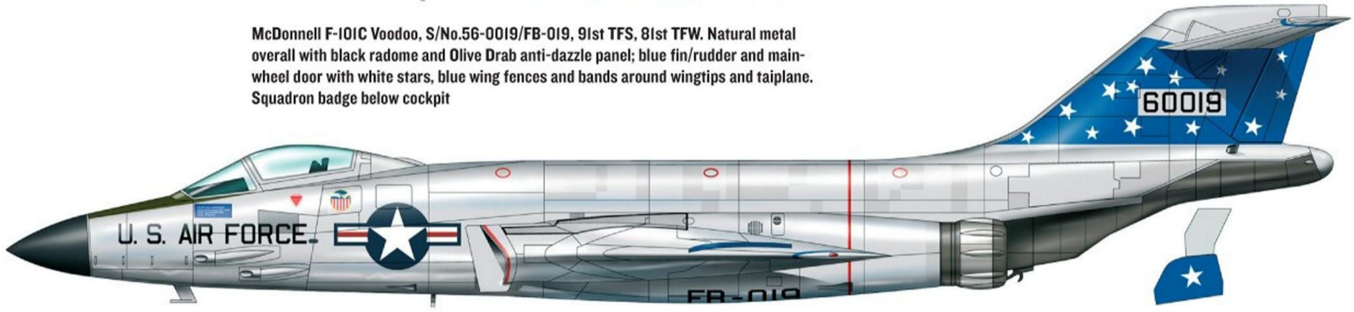
McDonnell F-101A Voodoo, S/No.54-1453/FB-433, 92nd TFS, 81st TFW, 1960. Natural metal overall with black radome and Olive Drab anti-dazzle panel; standard markings. Yellow flashes on fin/rudder, yellow wing fences, wing and elevator tips; TFW badge below cockpit, 92nd TFS badge on fin

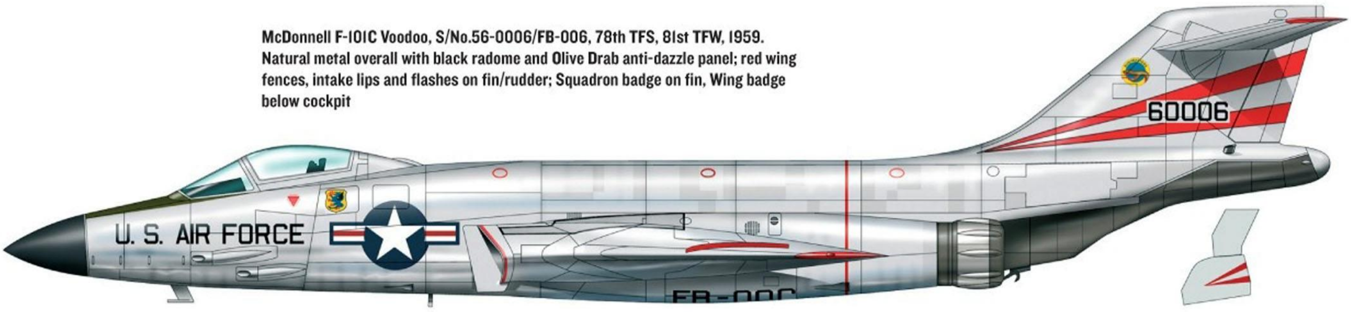


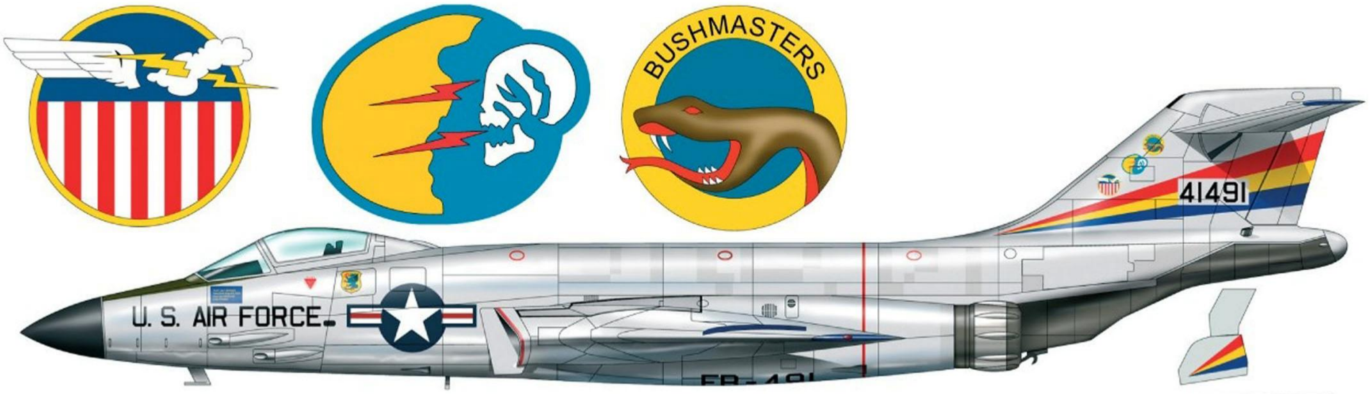
McDonnell F-101C Voodoo, S/No.56-0019/FB-019, 91st TFS, 81st TFW. Natural metal overall with black radome and Olive Drab anti-dazzle panel; blue fin/rudder and main-wheel door with white stars, blue wing fences and bands around wingtips and taiplane. Squadron badge below cockpit



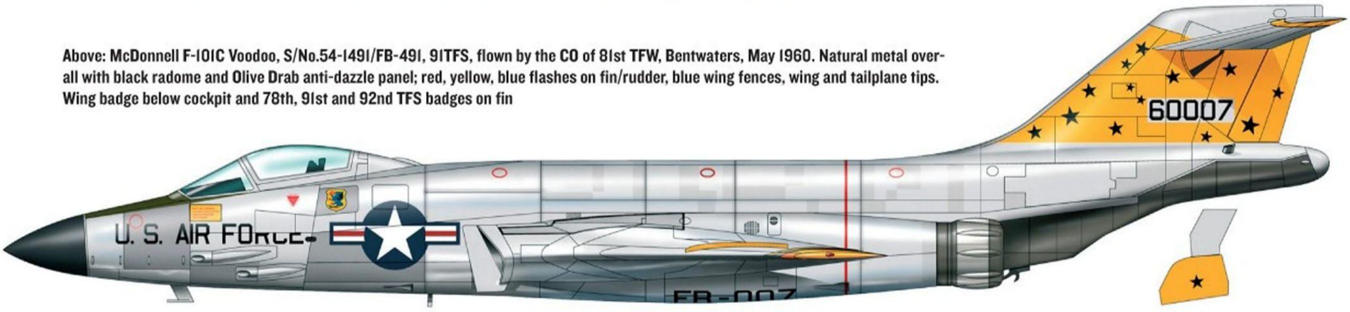
McDonnell F-101C Voodoo, S/No.56-0035/FB-035, 92nd Tactical Fighter Squadron, 81st Tactical Fighter Wing, Bentwaters, 1962. Natural metal overall with black codes and serials, blue/yellow/red fin with black/white stars. Dark Olive Drab anti-dazzle panel and grey walkway on wing outlined in black

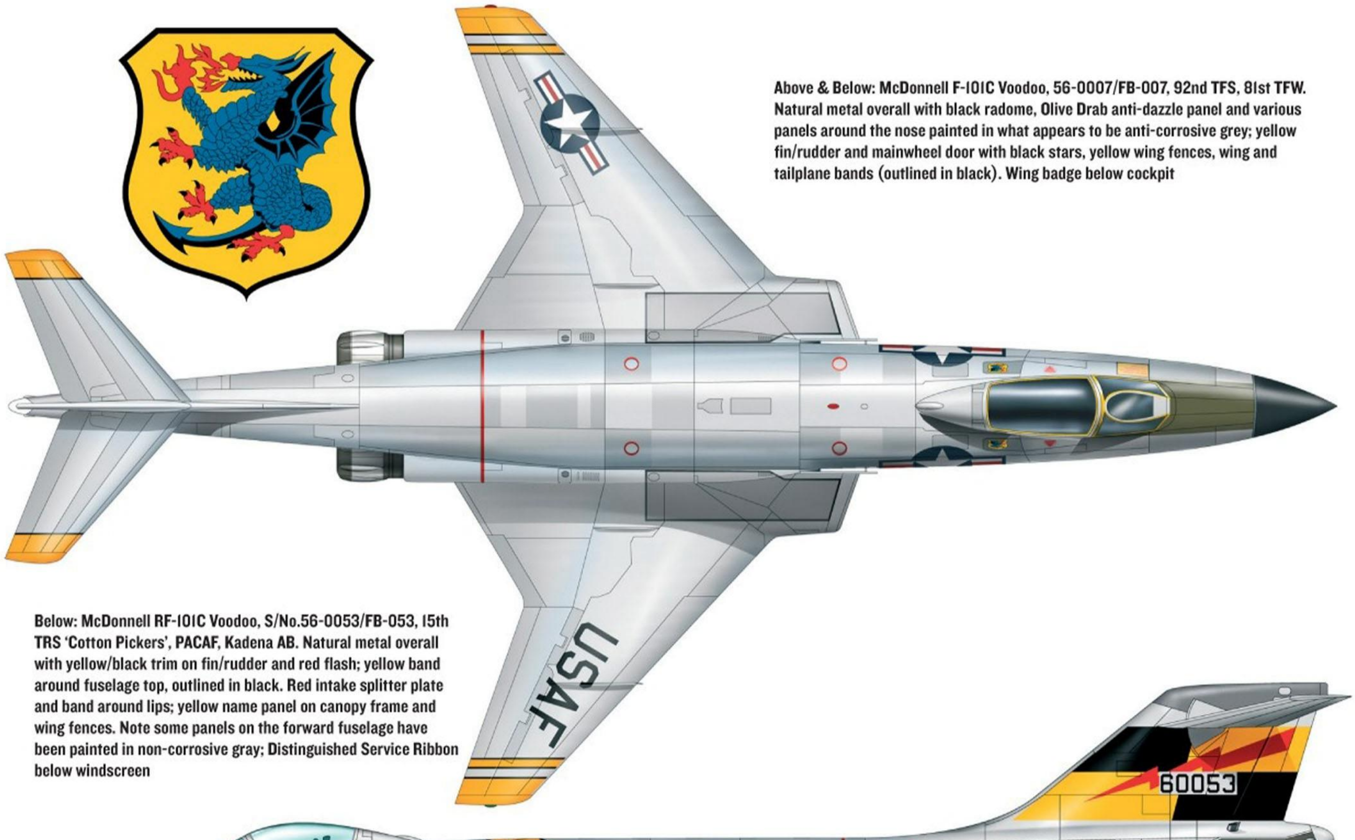
McDonnell F-101C Voodoo, S/No.56-0006/FB-006, 78th TFS, 81st TFW, 1959. Natural metal overall with black radome and Olive Drab anti-dazzle panel; red wing fences, intake lips and flashes on fin/rudder; Squadron badge on fin, Wing badge below cockpit





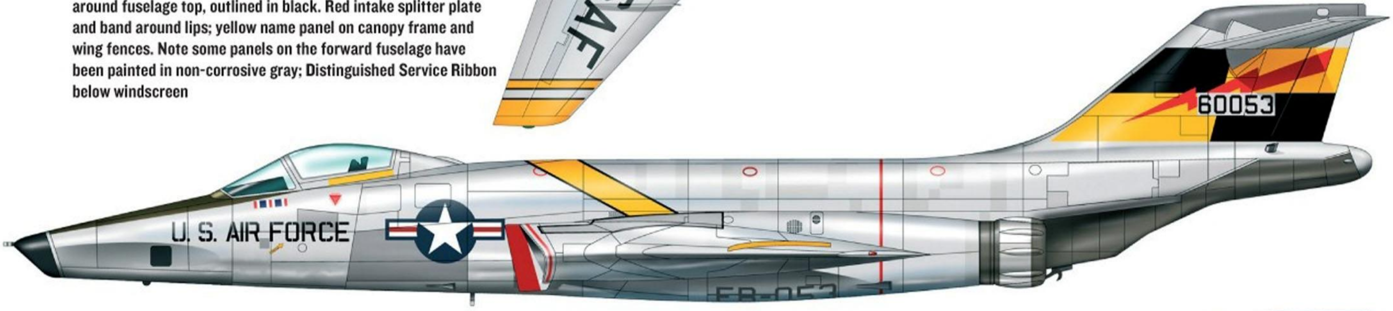
Above: McDonnell F-101C Voodoo, S/No.54-1491/FB-491, 91TFS, flown by the CO of 81st TFW, Bentwaters, May 1960. Natural metal overall with black radome and Olive Drab anti-dazzle panel; red, yellow, blue flashes on fin/rudder, blue wing fences, wing and tailplane tips. Wing badge below cockpit and 78th, 91st and 92nd TFS badges on fin





Above & Below: McDonnell F-101C Voodoo, 56-0007/FB-007, 92nd TFS, 81st TFW. Natural metal overall with black radome, Olive Drab anti-dazzle panel and various panels around the nose painted in what appears to be anti-corrosive grey; yellow fin/rudder and mainwheel door with black stars, yellow wing fences, wing and tailplane bands (outlined in black). Wing badge below cockpit

Below: McDonnell RF-101C Voodoo, S/No.56-0053/FB-053, 15th TRS 'Cotton Pickers', PACAF, Kadena AB. Natural metal overall with yellow/black trim on fin/rudder and red flash; yellow band around fuselage top, outlined in black. Red intake splitter plate and band around lips; yellow name panel on canopy frame and wing fences. Note some panels on the forward fuselage have been painted in non-corrosive gray; Distinguished Service Ribbon below windscreen



McDonnell RF-101C Voodoo, S/No.56-0228/FB-228, 363rd TFW, February 1965. Early camouflage scheme in Olive Brown, Olive Green and Dark Green, with Pale Grey undersides; black nose, red intake lips. Serial in black (41) and white (507)

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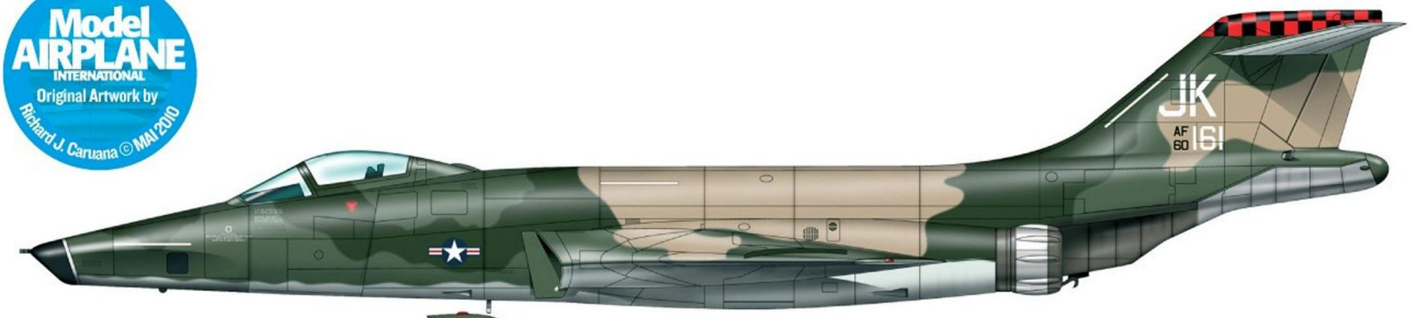
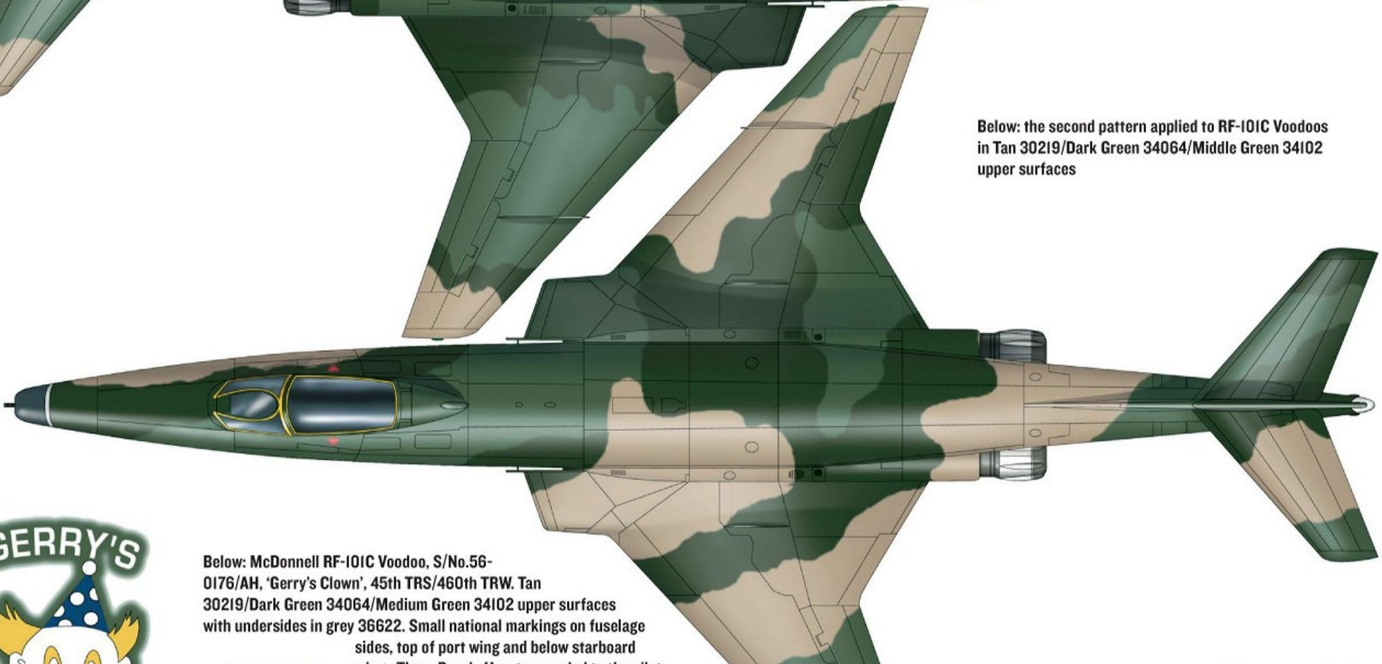


Above: McDonnell RF-101C Voodoo, S/No.56-0161/JK, 31st Tactical Reconnaissance Squadron, Shaw Air Force Base (South Carolina), June 1970. Tan 30219/Green 34064/Green 34102 upper surfaces with undersides in grey 36622. Black/red checks high on fin; small national markings on fuselage sides, top of port wing and below starboard wing. 'JK' and '161' are in white, 'AF 60' is in black

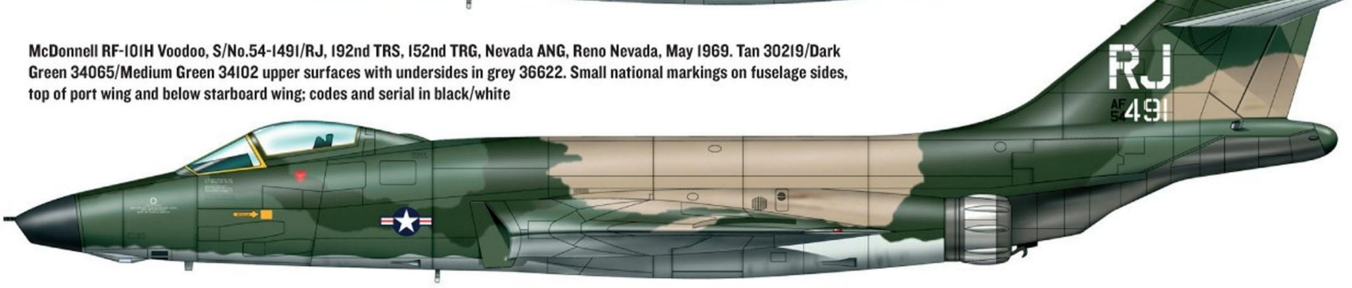
Below: one of two pattern styles applied to RF-101C Voodoos in Tan 30219/Dark Green 34064/Middle Green 34102 upper surfaces



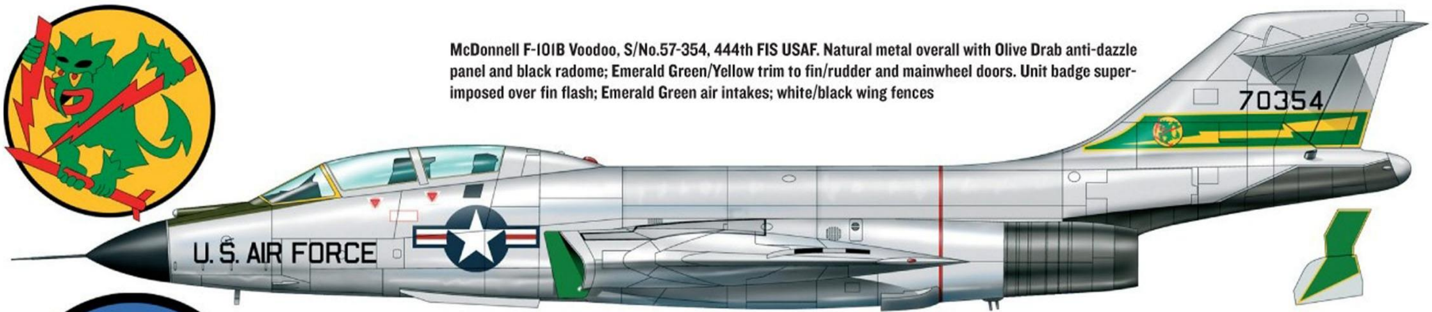
Below: the second pattern applied to RF-101C Voodoos in Tan 30219/Dark Green 34064/Middle Green 34102 upper surfaces

Below: McDonnell RF-101C Voodoo, S/No.56-0176/AH, 'Gerry's Clown', 45th TRS/460th TRW. Tan 30219/Dark Green 34064/Medium Green 34102 upper surfaces with undersides in grey 36622. Small national markings on fuselage sides, top of port wing and below starboard wing. Three Purple Hearts awarded to the pilot after scoring three hits over the A Shau Valley are reproduced below the clown's head (lettering in white)

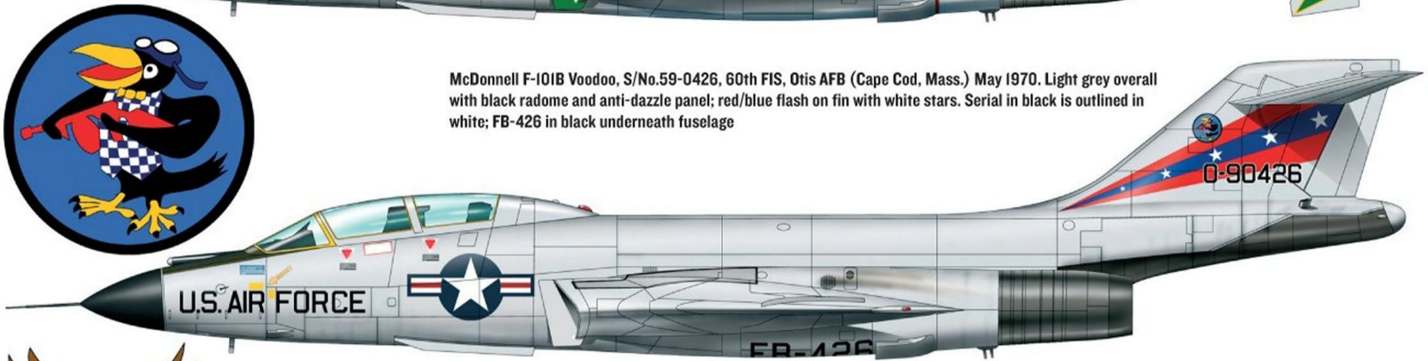
McDonnell RF-101H Voodoo, S/No.54-1491/RJ, 192nd TRS, 152nd TRG, Nevada ANG, Reno Nevada, May 1969. Tan 30219/Dark Green 34065/Medium Green 34102 upper surfaces with undersides in grey 36622. Small national markings on fuselage sides, top of port wing and below starboard wing; codes and serial in black/white



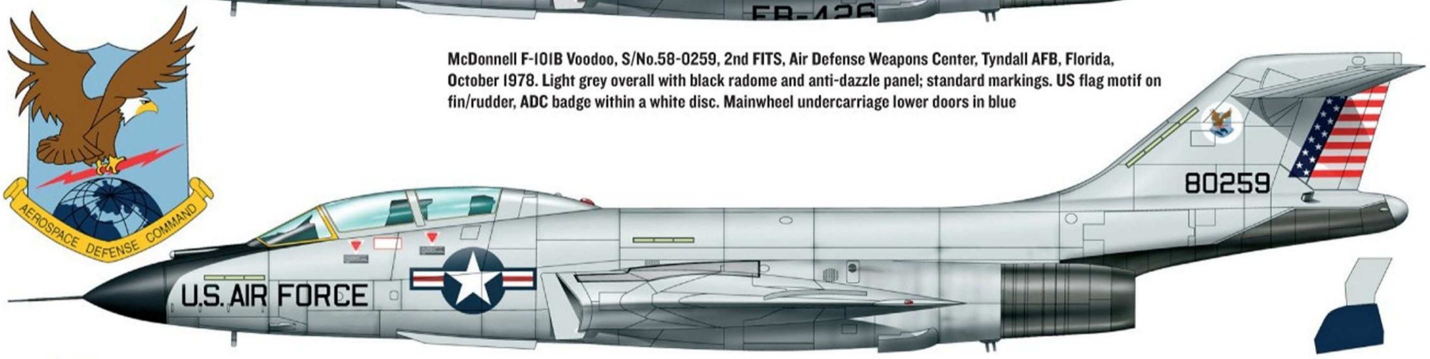
McDonnell F-101B Voodoo, S/No.57-354, 444th FIS USAF. Natural metal overall with Olive Drab anti-dazzle panel and black radome; Emerald Green/Yellow trim to fin/rudder and mainwheel doors. Unit badge superimposed over fin flash; Emerald Green air intakes; white/black wing fences



McDonnell F-101B Voodoo, S/No.59-0426, 60th FIS, Otis AFB (Cape Cod, Mass.) May 1970. Light grey overall with black radome and anti-dazzle panel; red/blue flash on fin with white stars. Serial in black is outlined in white; FB-426 in black underneath fuselage



McDonnell F-101B Voodoo, S/No.58-0259, 2nd FITS, Air Defense Weapons Center, Tyndall AFB, Florida, October 1978. Light grey overall with black radome and anti-dazzle panel; standard markings. US flag motif on fin/rudder, ADC badge within a white disc. Mainwheel undercarriage lower doors in blue



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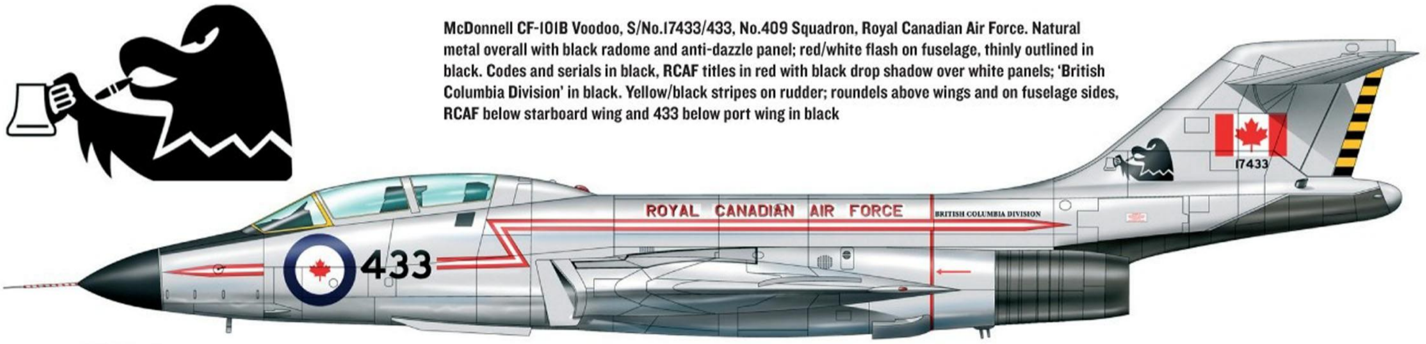
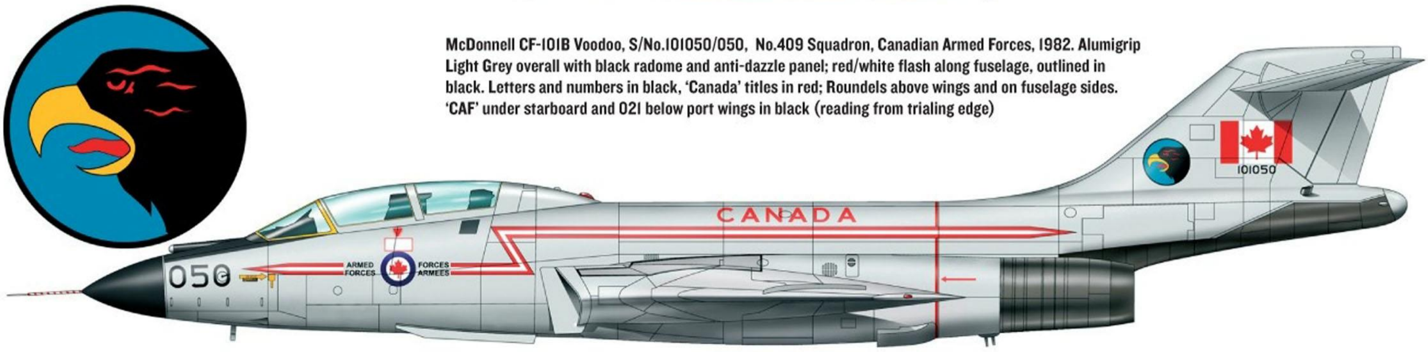
McDonnell RF-101A 54-1501/5650/650, Nationalist Chinese Air Force, 1959. Natural metal overall with black nose and Olive Drab anti-dazzle panel; national markings in six positions, with rudder in white and blue stripes. All codes and serials in black. Wing walkway in grey without the usual black outline

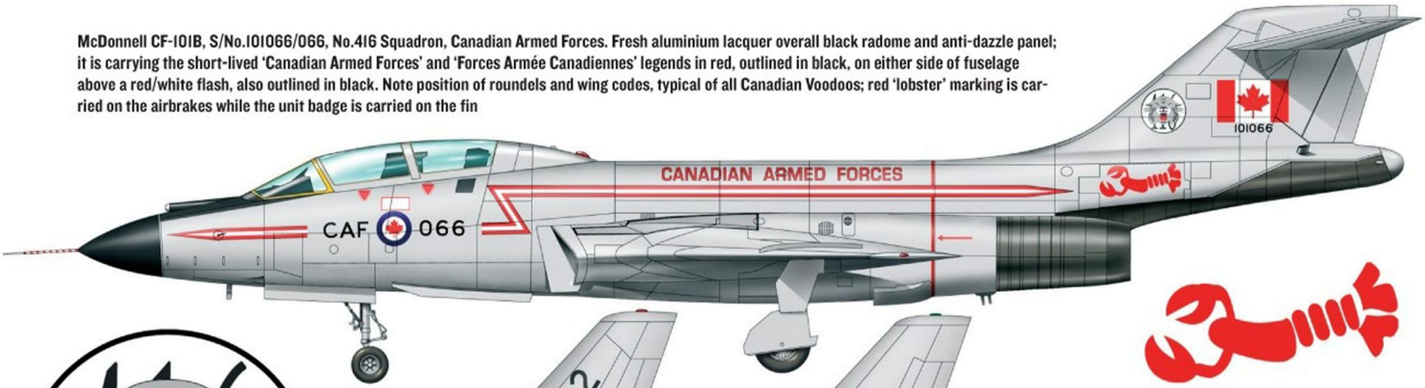
McDonnell CF-101B Voodoo, S/No.17433/433, No.409 Squadron, Royal Canadian Air Force. Natural metal overall with black radome and anti-dazzle panel; red/white flash on fuselage, thinly outlined in black. Codes and serials in black, RCAF titles in red with black drop shadow over white panels; 'British Columbia Division' in black. Yellow/black stripes on rudder; roundels above wings and on fuselage sides, RCAF below starboard wing and 433 below port wing in black

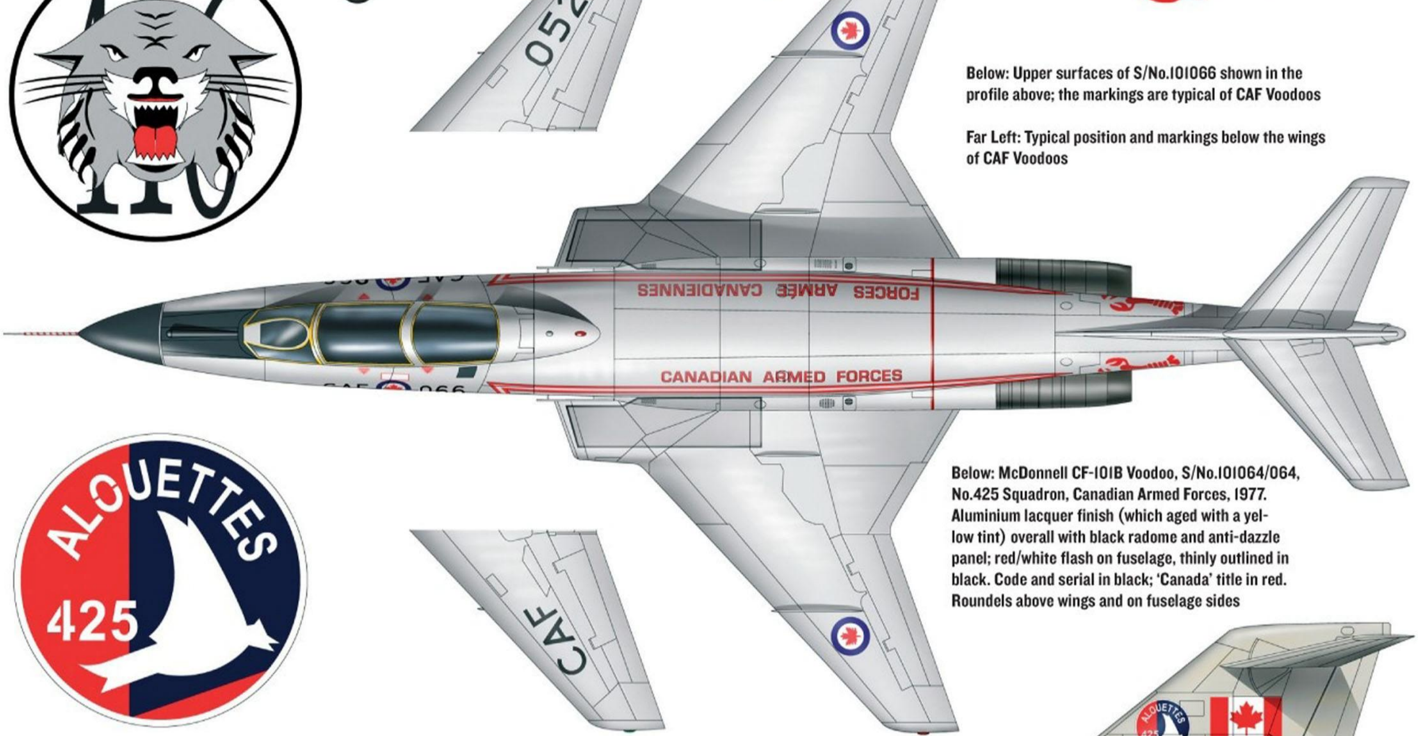


McDonnell CF-101B Voodoo, S/No.101050/050, No.409 Squadron, Canadian Armed Forces, 1982. Alumigrip Light Grey overall with black radome and anti-dazzle panel; red/white flash along fuselage, outlined in black. Letters and numbers in black, 'Canada' titles in red; Roundels above wings and on fuselage sides. 'CAF' under starboard and 021 below port wings in black (reading from trialing edge)



McDonnell CF-101B, S/No.101066/066, No.416 Squadron, Canadian Armed Forces. Fresh aluminium lacquer overall black radome and anti-dazzle panel; it is carrying the short-lived 'Canadian Armed Forces' and 'Forces Armée Canadiennes' legends in red, outlined in black, on either side of fuselage above a red/white flash, also outlined in black. Note position of roundels and wing codes, typical of all Canadian Voodoos; red 'lobster' marking is carried on the airbrakes while the unit badge is carried on the fin



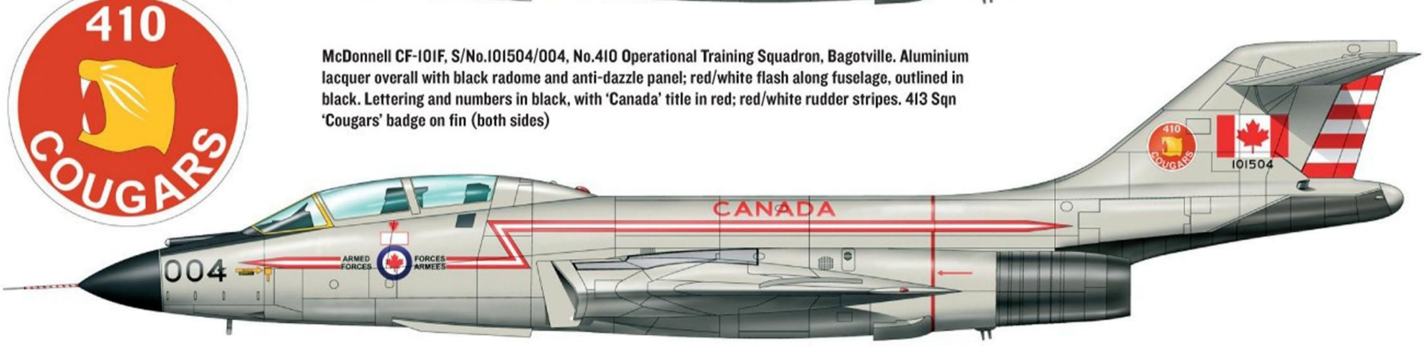


Below: Upper surfaces of S/No.101066 shown in the profile above; the markings are typical of CAF Voodoos

Far Left: Typical position and markings below the wings of CAF Voodoos

Below: McDonnell CF-101B Voodoo, S/No.101064/064, No.425 Squadron, Canadian Armed Forces, 1977. Aluminium lacquer finish (which aged with a yellow tint) overall with black radome and anti-dazzle panel; red/white flash on fuselage, thinly outlined in black. Code and serial in black; 'Canada' title in red. Roundels above wings and on fuselage sides

McDonnell CF-101F, S/No.101504/004, No.410 Operational Training Squadron, Bagotville. Aluminium lacquer overall with black radome and anti-dazzle panel; red/white flash along fuselage, outlined in black. Lettering and numbers in black, with 'Canada' title in red; red/white rudder stripes. 413 Sqn 'Cougars' badge on fin (both sides)



McDonnell CF-101B Voodoo, S/No.101014, No.425 AW (F) Squadron CAF, in a 60th anniversary scheme. Blue front section, red rear section , including all flying surfaces, with yellow and black feathers; white bird head with yellow and black detail. Black radome and anti-dazzle panel; 'Lark One Canada' in yellow on port side (see far right), 'Alouette Un Canada' on starboard side. Note decoration of main undercarriage doors; Soviet Star 'kill' marking on the nose denotes a 'Bear' intercept

As 1984 marked the final year of the Voodoo's service career with the Canadian Armed Forces squadrons daubed their aircraft with colourful schemes to mark the event. From bottom to top: EF-101B of No.414 Squadron (Black Knights) that held on to this aircraft up to 1987, 'Alouette Un' from No.425 Squadron, 'Lynx One' from No.416 Squadron and 'Hawk One' from 409 Squadron (CAF)

'Voodoo' – were dispatched for service in Europe and this version was followed by 47 examples of the F-101C, which was externally identical and served alongside the earlier F-101A. All the 'C's differences were internal, including a strengthened airframe that resulted in a higher overall weight. The single-seat Voodoo interceptor was replaced in service by another McDonnell design, the F-4 Phantom II, with most surviving F-101A/Cs being converted to the reconnaissance role.

The idea for reconnaissance version of the F-101 was born back in 1953 when the USAF requested that two F-101As be built as YRF-101A tactical recce aircraft under 'Weapons System 105L' by simply eliminating the armament and redesigning the whole nose area to accommodate four film cameras. The camera array consisted of one forward oblique, one left and right oblique and another vertical for low-level photography; two high-altitude vertical cameras were fitted behind the cockpit inside what was previously the ammunition bay.

The first of two prototypes of the YRF-101A flew for the first time on 10 May 1956 and was soon followed by the production of 35 RF-101As. Production then went ahead on 166 examples of the RF-101C that shared the same strengthened airframe of the F-101C, with the first example flying for the first time on 12 July 1957. Extensive operational use was made of the RF-101Cs in Vietnam where it began to operate with the 67th TRW in October 1961, becoming the only version of the Voodoo to see operational combat service. RF-101As from the 363rd TRW based at Shaw Air Force Base (AFB) flew the aerial surveillance sorties over Cuba during the Missile Crisis of October 1962. Nearly all Voodoo reconnaissance missions were performed in extremely dangerous conditions over enemy-held territory, causing the loss of 31 RF-101Cs in action and a further six examples in accidents up to the time of its withdrawal from South East Asia in 1970. Taiwan was the only foreign recipient of RF-101As when the USAF handed over eight examples with the scope of performing reconnaissance flights over China.

With the withdrawal of the F-101A/C from front-line service McDonnell began a programme of converting surviving machines for the recce role. These consisted of 29 conversions from F-101A to RF-101G and 31 further conversions from F-101C to RF-101H. Both 'G' and 'H' models had a different, shorter camera nose from that of the previous RF-101A/C and these Voodoos served exclusively with Air National Guard (ANG) units up to 1972.

Late in 1953 the USAF issued 'Weapons System 217A' calling for a supersonic two-seat fighter aircraft as a stop-gap measure until the problems with Convair's programme on the F-102A/B could be solved to its satisfaction. Three companies were shortlisted, with Northrop proposing a swept-wing version of the F-89 Scorpion, North American an upgraded F-100 Super Sabre and McDonnell a much more straightforward adaptation of its F-101 Voodoo (originally designated as F-109). The USAF's choice in favour of two-seat Voodoo was confirmed in June 1954 designating it as F-101B, and the prototype NF-101B performed its maiden flight on 27 March 1957. The longer front fuselage of the new aircraft featured a two-seat tandem cockpit arrangement under a single clamshell canopy. The more capacious front fuselage could house the Hughes MG-13 fire control radar. Transponders linked for the Semi-Automatic Ground Environment (SAGE) system allowed ground controllers to guide the aircraft to its target through adjustments made to the aircraft's autopilot.

Production F-101B Voodoos were powered by a pair of Pratt & Whitney J57-P-55 engines each providing 11,990 lbf thrust featuring longer afterburners. Trials with these engines had been conducted on the single-seat JF-101A that set a world speed record of 1,207mph late in 1957. On the F-101B, the '-55' engines enabled it to attain a maximum speed of Mach 1.85. No cannon armament was fitted, this being replaced by six AIM-4 Falcon air-to-air missiles fitted on a rotating pallet inside the fuselage weapons bay. Late production aircraft were modified to carry two 1.7 Kiloton MB-1/AIR-2 Genie nuclear rockets and eventually all F-101Bs in service were retrofitted with this modification as from 1961 under 'Project Kitty Car'.

By the end of its production 479 F-101Bs had been delivered, most of which were to serve with the Air Defense Command (ADC) beginning in 1959. While 400 of this total were standard F-101Bs flown by a pilot in the front seat and a weapons operator in the rear, 79 examples were fitted with dual controls for operational training and designated TF-101B. A further batch of 152 F-101Bs were converted to dual controls and were eventually redesignated F-101Fs.

The story of the two-seat Voodoo in service across the US northern border in Canada began as a consequence of the Canadian Government's axing of the Avro CF-105 Arrow programme on 20 February 1959. This left the Royal Canadian Air Force (RCAF) with the ageing CF-100 Canuck in service and an urgent need for its replacement. The choice fell on the F-101B purposely modified to suit the RCAF's needs after the USAF indicated that it was prepared to hand over 56 such aircraft together with ten F-101F dual-control version once the F-102's problems had been cured and it could be used in place of the Voodoos in the North American Air Defense Command (NORAD) zones.

In June 1961 a final agreement was reached after nearly two years of haggling over funding and a debate centred around the adoption of nuclear weapons systems. This agreement was intended to cover enough F-101Bs to replace nine existing CF-100 squadrons plus an Operational Training Unit (out). An initial batch of pilots underwent conversion training at Hamilton AFB in California to form the core of CF-101 instructions back in Canada. 'Operation Queen's Row' was launched with the arrival of the first two CF-101s at RCAF Uplands (Ottowa) on 24 July 1961. No. 425 Squadron RCAF initially served as the Voodoo conversion training squadron, becoming operational on the type at RCAF Namao (Alberta) on 15 October 1961. When this squadron became fully operational conversion training tasks became the responsibility of No. 3 All Weather OTU at Bagotville (Quebec).

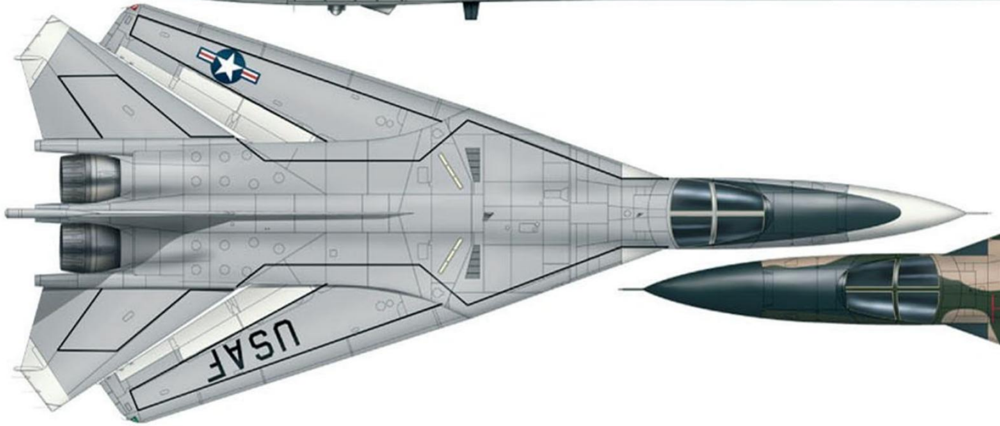
In 1971 47 CF-101B and nine CF-101F surviving Voodoos from the original batch of 66 were traded in for a similar number of ex-USAF examples that had been produced between 1956 and 1957 and had already spent some years in long-term storage at Davis Monthan AFB (Arizona) but in fact had very low flying hours. Under 'Operation Peace Wings' the Canadian Air Force (CAF – the 'Royal' had been dropped in 1968) contracted Bristol Aerospace Ltd of Winnipeg (Manitoba) with the overhaul of these aircraft, which included the transfer of the engines from the 'old' to the 'new' aircraft. Then the Voodoos were transferred once more to the US for the installation of the improved MG-13 fire control system and MB-5 autopilot. Most of the old aircraft that had been traded in were scrapped except for 22 examples that were converted to RF-101B fitted with a camera nose. These Voodoos served with the Nevada ANG.

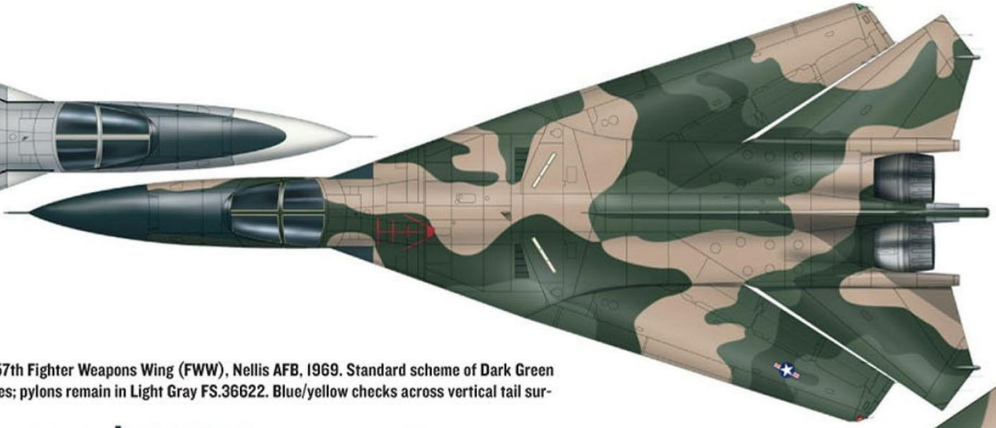
By the end of the 1970s it was evident that the CF-101, together with the CF-104 and CF-5, were reaching obsolescence. Another McDonnell Douglas product, the CF-18 Hornet, was chosen as replacement and the Voodoo OTU began conversion onto the new type in June 1982. All operational flying by Canadian Voodoo squadrons coming to an end in December 1984. Meanwhile two F-101Bs were leased from the USAF in 1982 for specialised operations. One was configured as EF-101B, converted with countermeasures gear and used as an electronic aggressor; the other was a standard F-101B retained for proficiency training of crews that were to fly the EF-101B. Both aircraft were eventually returned to the US in 1987.

While the Voodoo's career cannot be described as brilliant it served well in the roles that were eventually asked of it. Moreover it served as an evolutionary step towards the design of the F-4 Phantom II that was to become one of the best fighting machines ever produced. ■

Richard J. Caruana – 2010

General Dynamics F-111A, S/No.39771, NASA, Dryden Flight Research Center, 1968. Light grey upper surfaces with white undersides; white moveable control surfaces and tailplane tips. NASA script in dark blue and yellow; all other markings in black. National markings in standard positions. See scrap view below for markings on upper surfaces

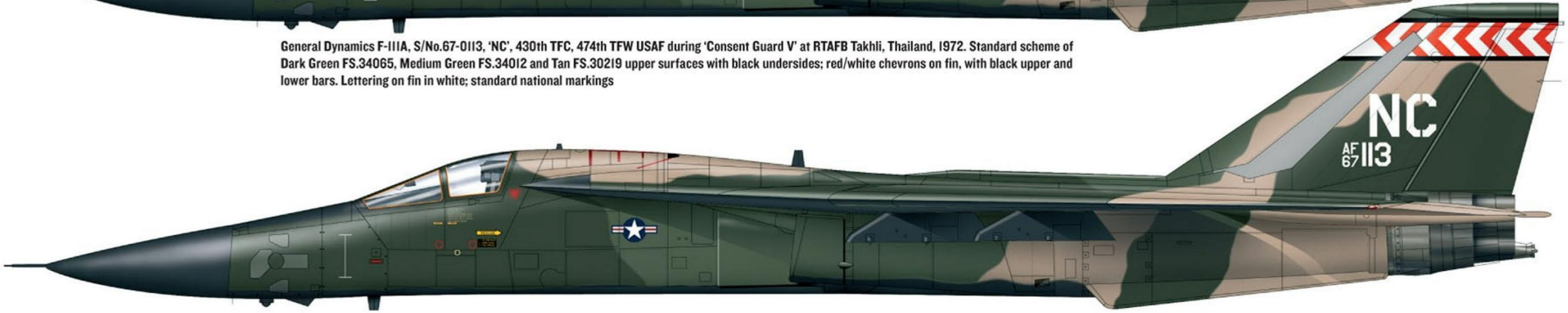




Left: Typical upper surface camouflage pattern in Dark Green FS.34065, Medium Green FS.34012 and Tan FS.30219

General Dynamics F-111A, S/No.67-0056, 'WF', 422nd Fighter Weapons Squadron (FWS), 57th Fighter Weapons Wing (FWW), Nellis AFB, 1969. Standard scheme of Dark Green FS.34065, Medium Green FS.34012 and Tan FS.30219 upper surfaces with black undersides; pylons remain in Light Gray FS.36622. Blue/yellow checks across vertical tail surfaces. White lettering on fin; national markings in standard positions

General Dynamics F-111A, S/No.67-0113, 'NC', 430th TFC, 474th TFW USAF during 'Consent Guard V' at RTAFB Takhli, Thailand, 1972. Standard scheme of Dark Green FS.34065, Medium Green FS.34012 and Tan FS.30219 upper surfaces with black undersides; red/white chevrons on fin, with black upper and lower bars. Lettering on fin in white; standard national markings

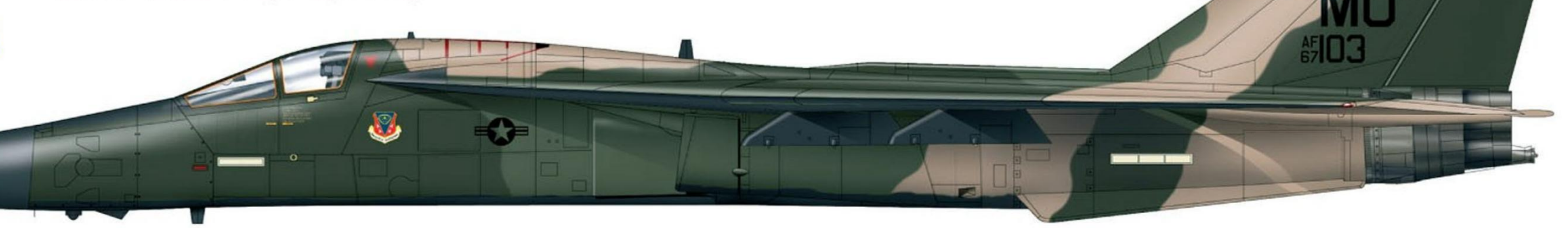


General Dynamics F-111A, S/No.60-0019, 'Combat Lancer' operations, flown by Maj. Bill Coltman, South East Asia. Standard scheme of Dark Green FS.34065, Medium Green FS.34012 and Tan FS.30219 upper surfaces with Black undersides; black codes and serial on fin. Black name and mission markings below cockpit (added after returning to the USA); crew chief name on nose wheel door. Blue/yellow flash on rudder

General Dynamics F-111A, S/No.66-0027, 'ND', 452nd TFC, 474th TFW USAF, Nellis AFB. Standard early camouflage finish of Dark Green FS.34065, Medium Green FS.34012 and Tan FS.30219 upper surfaces with Light Gray FS.36622 undersides; green/white chevrons across vertical tail surfaces with black bar above and below. White lettering on fin; national markings in standard positions. '027' repeated on nose wheel doors

General Dynamics F-111A, S/No.67-0067, 'NA', 474th TFW USAF. Standard scheme of Dark Green FS.34065, Medium Green FS.34012 and Tan FS.30219 upper surfaces with Black undersides; white codes on fin, yellow bar across vertical tail surfaces. National markings in standard positions; unit badge aft of cockpit

General Dynamics F-111A, S/No.67-0103, 'MO', 366th TFW USAF. Standard scheme of Dark Green FS.34065, Medium Green FS.34012 and Tan FS.30219 upper surfaces with Black undersides; Black national markings and codes on fin. Medium Blue fin fairing; unit badge aft of cockpit



CORPO AEREO ITALIANO

The Regia Aeronautica's Contribution to the Battle of Britain

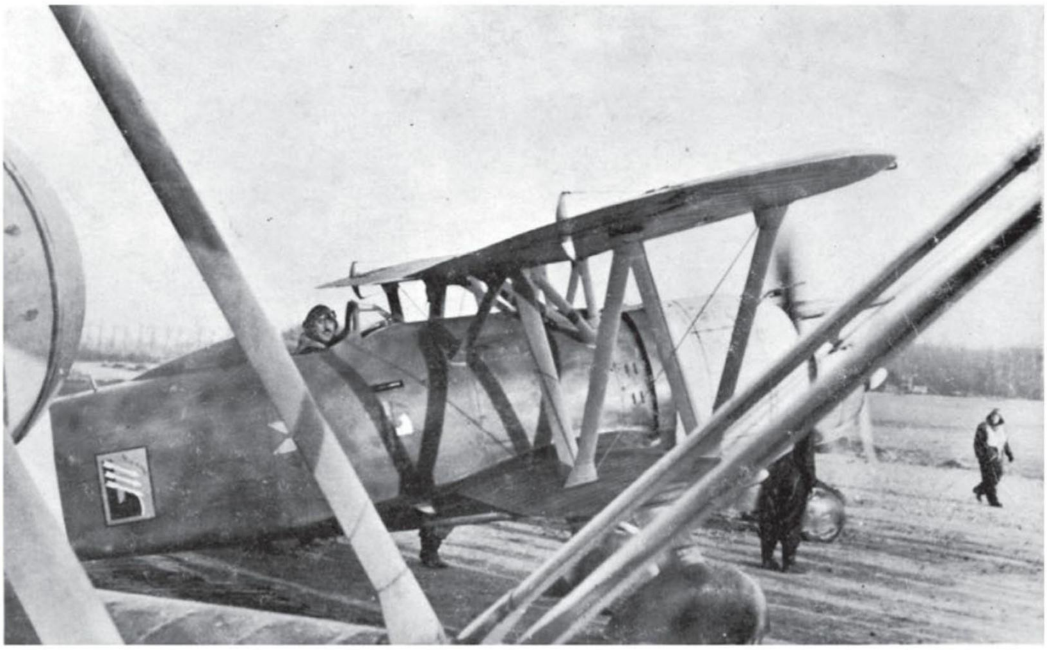
Italy's entry into the Second World War, publicly declared on 10th June 1940, was a miscalculated and misguided attempt at grabbing part of the loot that would otherwise have ended up completely in the hands of the fast conquering Nazi war machine.

Following a short and ineffective cycle of operations against France it had already become apparent that Italy was ill equipped for a modern war and lacked a clear strategy and plan of action. Notwithstanding all this, Mussolini felt that Italy had to participate in the aerial offensive that the Luftwaffe was waging against Britain even though such a token force on the part of the *Regia Aeronautica* could hardly achieve any considerable impact. Moreover, the transfer of Italian units to operate across the English Channel would only serve to deplete forces far more necessary in the Mediterranean theatre. Tempting opportunities of political gains however won over good sense, possibly believing German propaganda claiming Britain was nearing capitulation.

The *Corpo Aereo Italiano* (CAI – Italian Aviation Corps) was formed in northern Italy on 10th September 1940 comprising two bomber *Stormi* equipped with Fiat BR.20Ms, one fighter *Stormo* equipped with Fiat CR.42s and Fiat G.50s and a reconnaissance *Squadriglia* (*Ricognizione Strategica Terrestre*) operating a small number of Cant Z.1007bis. The fighter element, in particular, was to suffer mostly; both CR.32 and G.50 were obsolete or close to obsolete and their open cockpits were to be cause for great discomfort in the colder northern European climes as pilots suffered frostbite to their hands and faces.

Once the expeditionary force had been assembled all the units began a short and limited training period hampered mostly by scarcity of fuel in northern Italy as a result of the brief campaign against France. With the training period completed the CAI units began their ferry flights to Belgium, from where they were to operate. These flights also served to highlight the difficulties that would continually characterise the deployment of badly suited aircraft in an environment alien to that for which they had been designed to operate.

Fiat G.50 MM.5372 flown by Maggiore Mario Bonzano, Commander of the XX° *Gruppo* can be seen in the background as ground crew tune up the engine of another G.50 in the foreground. Unlike the CR.42 biplanes, the paintwork of the G.50s suffered immensely in the adverse weather conditions of northern Europe (R. Caruana Archives)



Ferruccio Vosilla, commander of the 18° Gruppo equipped with CR.42 biplanes taxies out for another mission from Maldegem in Belgium. Note the command pennant below the cockpit (R. Caruana Archives)

THE FIAT BR.20M

On 10th June 1940, 172 BR.20s were on strength with the *Regia Aeronautica*, principally within the 7° *Stormo* (4° and 25° *Gruppi* based at Lonate Pozzolo), 13° (11° and 43° *Gruppi* at Piacenza), 18° (31° *Gruppo* at Aviano) and 43° (98° and 99° *Gruppi* at Cameri). The 43°, 7° and 13°, based in the north of Italy, participated in the short campaign against France throughout the remaining days of that month. On 13th June, nineteen BR.20s from the 13° *Stormo* attacked Fayence and Hyéres.

By that time, a third of the BR.20s in service were of the new 'M' subtype ('M' standing for 'modificato', or modified). This version was some 70cm longer than its predecessor and featured a redesigned nose with increased glazed area under the chin and a new nose turret. The tail cone was also extended, while the tailwheel, now completely enclosed, was moved further aft. These modifications raised both empty and loaded weight of the aircraft resulting in a marked drop in the aircraft's performance. After testing at Lonate Pozzolo, the Borletti-Golnaghi bomb-aiming device replaced the Jozza sight.

A force of 80 BR.20Ms from 13° and 43° *Stormi* was transferred in October 1940, with the former unit taking up residence at Melsbroek while the latter was based at Chèvres. The 13° *Stormo* was under the command of Commandante Carlo de Capoa and

consisted of the 43º *Gruppo* (1, 3, 4, 5 *Squadriglia*); the 43º *Stormo* under the command of Colonello Luigi Questa consisted of the 98º *Gruppo* (240 & 241 *Squadriglie*) and 99º *Gruppo* (242 & 243 *Squadrigliae*). Not all bombers arrived safely at their destination, as at least five were lost in transit after emergency landings due to bad weather. Once in Belgium the 13º and 43º *Stormi* became known as *Kampfgeschwader* 13 and 43 respectively and were incorporated into *Fliegerkorps II*.

By the 22nd of the month the force had settled down and launched its first operation on the night of 24th October with an attack against Ramsgate; taking part were 12 BR.20Ms from the 13º *Stormo* and five from the 43º. Three of the bombers lost their way on their return flight and their crews escaped by parachute. Another bomber was damaged, resulting in the loss of an entire crew as it crashed on take-off. Another mission planned for 27th October had to be cancelled and postponed to two days later with the participation of 15 BR.20Ms from the 43º *Stormo* escorted by 39 CR.42s and 34 G.50s. This time it was performed successfully during the day at the cost of one BR.20M. Ipswich and Harwich were attacked on 5th November by a force of eight BR.20Ms from the 13º *Stormo* ending with the loss of another bomber. Ramsgate was to be the target of five Italian bombers from the 43º *Stormo* on 9th November, a raid that had to be cancelled due to bad weather. An operation planned the following day against Ipswich was also cancelled as conditions did not improve. Harwich, where most of Britain's supplies arrived by sea, was targeted once more on the 11th. 'Operazione Cinzano' was a well planned action in co-operation with Luftwaffe Ju 87s against a heavily escorted convoy in the Thames Estuary; five Cant Z.1007s of the 172^ *Squadriglia* performed a diversion against London. The ten BR.20Ms from the 43º *Stormo* escorted by all the CAI fighter element encountered heavy RAF fighter opposition and three bombers were destroyed and a further three returned to base badly damaged.

These raids exposed the weaknesses of the CAI showing how poorly equipped it was for the task, while fighter cover proved to be completely inadequate. During the following weeks, Great Yarmouth and Lowestoft were added to the list of targets visited and bomber but at a considerable price. During the late afternoon of 2nd December 1940 a lone BR.20M from the 98º *Gruppo* flown by Capitano Ugo Maccieraldo deviated from its course and found itself over London, where the pilot dropped his bomb load, making this the only Italian raid against the Capital. Enemy activity against Britain started to run down during December; the last recorded BR.20 mission was performed on 2nd January 1941 with four aircraft from the 13º *Stormo* against Ipswich. Two of these dropped out due to technical problems. By the time the CAI returned home later that month, 20 BR.20Ms had been lost.

THE CANT Z.1007

The 172^ *Squadriglia Ricognizione Strategica Terrestre* (strategic ground reconnaissance squadron) that was formed in September 1940 specifically to participate in operations against the British Isles consisted of five Cant Z.1007bis. These machines, under the command of Capitano Carlo Cippo Pirelli arrived at Chievres, in Belgium, on 19th October to join the CAI where they were redesignated as 172/ *Aufklarungsgruppe* within *Fliegerkorps II*. The only time they went into action was during that ill-fated raid on London of 11th November 1940. Otherwise these bombers were relegated to liaison and transport duties in support of the fighter units.

THE FIGHTER ELEMENT

This comprised 50 CR.42s together with a smaller number of G.50s, both of which could be considered as obsolescent types for that theatre of operations. The Fiat biplanes were drawn from the 18º *Gruppo* (83, 85, 95 *Squadriglie*) under the command of Maggiore Ferruccio Vosilla and now formed part of the 56º *Stormo*. Their transfer flights began on 19th October to the Belgian airfield at Ursel, where the crews immediately found great difficulty in adapting to the cold weather. There the fighter units became known as the *Kampfgeschwader* 56. Further training flights confirmed the poor equipment with which the Italian pilots were being obliged to face the RAF, especially in the open cockpits of both CR.42 and G.50. No fighter escort was provided to the BR.20Ms during the night bombing raid against Harwich on 24th October, and the CR.42s only went into action five days later escorting the Italian bombers during a daylight raid against Ramsgate. On 11th November, the 40 CR.42s escorting the bombers to Harwich were jumped by Hurricanes and Spitfires that shot down three Italian fighters while a further 17 were forced down just after crossing the Channel on their way back, either through combat damage or due to shortage of fuel. Two more CR.42s were lost during a sortie by 29 fighters in the area between Margate and Folkstone.

According to Maggiore Vossilla's diary, the most memorable encounter by the CAI's CR.42s was on 23rd November when as soon as the Italian biplanes had crossed the British shores 14 Spitfires intercepted the Italian formation. Once the initial shock had been overcome the Italian fighter pilots put up a strong resistance; Vossilla records the shooting down of five Spitfires but does not mention any losses on his side. As raids by the CAI against the British Isles came to an end on 2nd January 1941 the CR.42s returned to Italy eight days later.

Although the Fiat G.50 was superior in many ways to the CR.42 biplane, it was one of the first monoplanes fighters to enter service with the Regia Aeronautica and had even been tested operationally during the Spanish Civil War. Adding some semblance of modernity to the CAI, the 48 G.50s were formed into the 20º Gruppo (351, 352 & 353 *Squadriglie*) of the 56º *Stormo* under the command of Maggiore Mario Bonzano as part of the fighter element. After a lengthy transfer and training period, operations started on 24th October escorting bombers on a raid against the port of Harwich. The Fiat monoplanes were in action also on 29th October, when 34 provided escort to the bombers raiding Ramsgate.

Neither G.50 nor CR.42 were equipped with any cockpit heating, nor facilities for heated flying suits. This caused considerable discomfort, as pilots flew in temperatures reaching -50º, with severe cases of frostbite to hands and faces being recorded. Luckily, the G.50s never met British fighters in action, as otherwise the encounter would have probably been similar to that of the CR.42s of 11th November.

Although elements of the CAI began their return journey to Italy on 10th January 1941 two *Squadriglie* of G.50s (352 & 353) were left behind to perform patrol duties over the Belgian and Dutch coasts. These units were transferred to Walkeren in Belgium and Desvres in France where they remained until 15th April 1941.

Around the third week of December the *Stato Maggiore* of the *Regia Aeronautica* ordered the return of the CAI to Italy. Although officially it was termed as a temporary measure due to deteriorating weather conditions it was in fact forced to take such a step due to pressure that Italian forces were suffering on other fronts, particularly in the operations against Greece and the British advance in North Africa.

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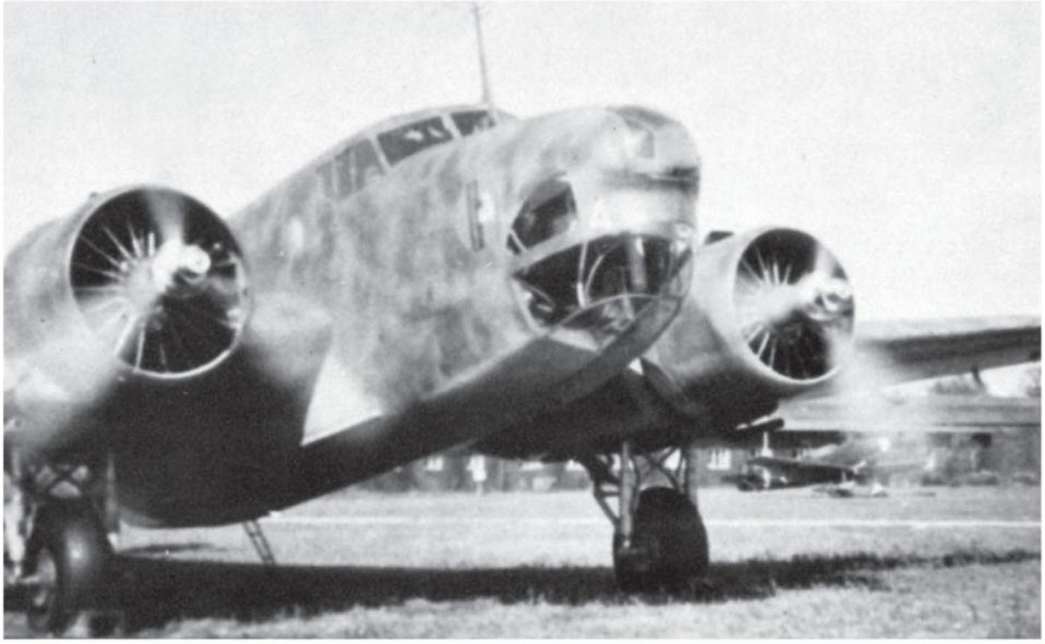
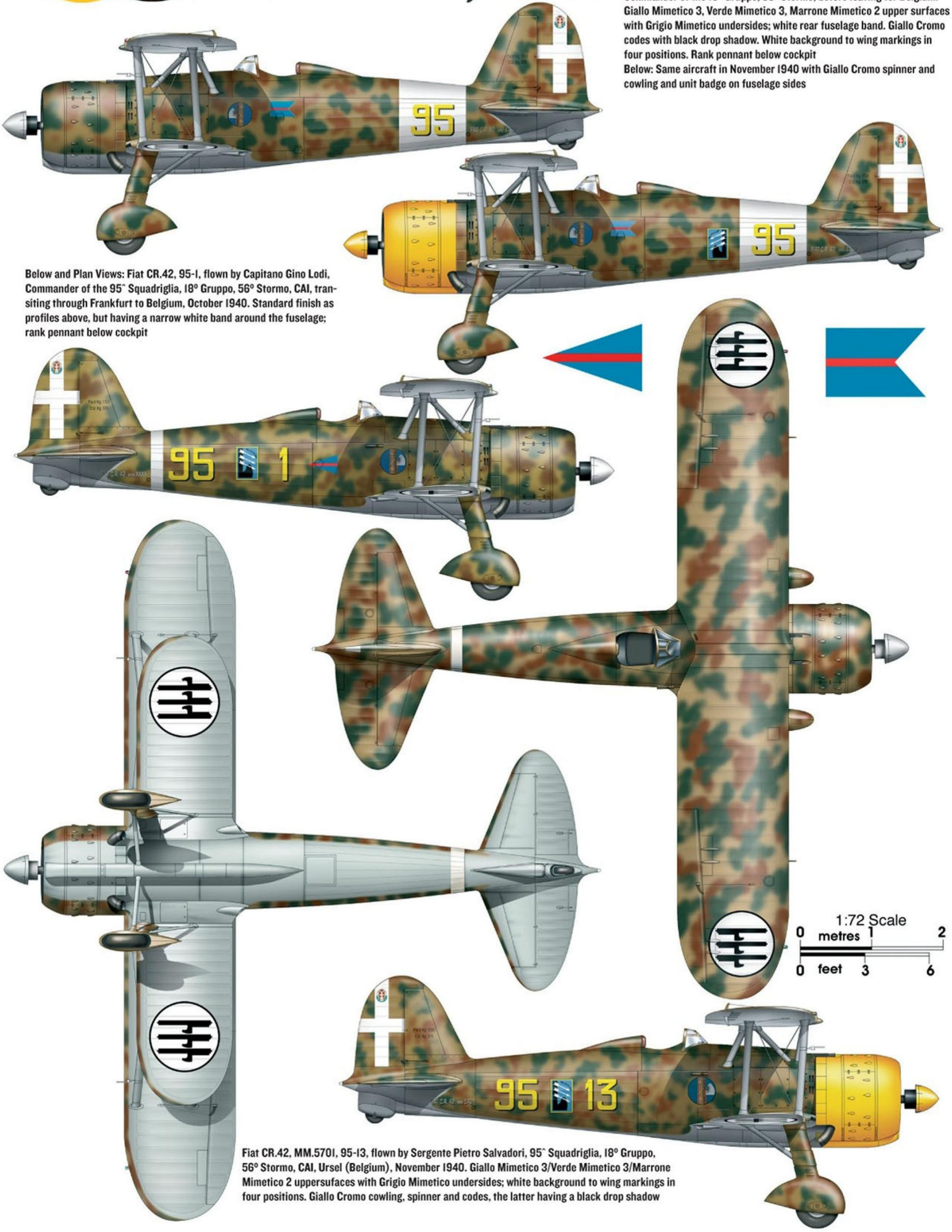


An unidentified BR.20M from the 43º *Gruppo* CAI is seen running up its engines at Chievres (R. Caruana Archives)

CORPO AEREO ITALIANO

In The Battle of Britain



Left: Fiat CR.42, MM.4462/95, flown by Maggiore Francesco Vossilla, Commander of the 18º Gruppo, 56º Stormo, before leaving for Belgium. Giallo Mimetico 3, Verde Mimetico 3, Marrone Mimetico 2 upper surfaces with Grigio Mimetico undersides; white rear fuselage band. Giallo Cromo codes with black drop shadow. White background to wing markings in four positions. Rank pennant below cockpit

Below: Same aircraft in November 1940 with Giallo Cromo spinner and cowling and unit badge on fuselage sides

Below and Plan Views: Fiat CR.42, 95-1, flown by Capitano Gino Lodi, Commander of the 95^ Squadriglia, 18º Gruppo, 56º Stormo, CAI, transiting through Frankfurt to Belgium, October 1940. Standard finish as profiles above, but having a narrow white band around the fuselage; rank pennant below cockpit

Fiat CR.42, MM.5701, 95-13, flown by Sergente Pietro Salvadori, 95^ Squadriglia, 18º Gruppo, 56º Stormo, CAI, Ursel (Belgium), November 1940. Giallo Mimetico 3/Verde Mimetico 3/Marrone Mimetico 2 uppersufaces with Grigio Mimetico undersides; white background to wing markings in four positions. Giallo Cromo cowling, spinner and codes, the latter having a black drop shadow

Left: Fiat CR.42, MM.5667, 83-1, flown by Capitano Molinari, Commander 83ˆ Squadriglia, 18º Gruppo, 56º Stormo, CAI, Ursel (Belgium), November 1940. Giallo Mimetico 3/Verde Mimetico 3/Marrone Mimetico 2 uppersufaces with Grigio Mimetico undersides; Giallo Cromo front of cowling and spinner. Yellow codes with black drop shadow; red rear fuselage band. Unit badge both sides

Below: Fiat CR.42, MM.5668, 83-2, 83ˆ Squadriglia, 18º Gruppo, 56º Stormo, CAI, November 1940. Giallo Mimetico 3, Verde Mimetico 3, Marrone Mimetico 2 upper surfaces with Grigio Mimetico undersides; Giallo Cromo cowling and codes, the latter having a black drop shadow.

Below: Fiat CR.42, MM.6975, 83-15, flown by Maresciallo Sozzi, 83ˆ Squadriglia, 18º Gruppo, 56º Stormo, CAI, Maldegem (Belgium), November 1940. Giallo Cromo spinner with red tip

Below: Fiat CR.42, MM.5689, 85-4, flown by Tenente 'Peppo' Re, 85ˆ Squadriglia, 18º Gruppo, 56º Stormo, CAI, Ursel (Belgium), mid-November 1940.

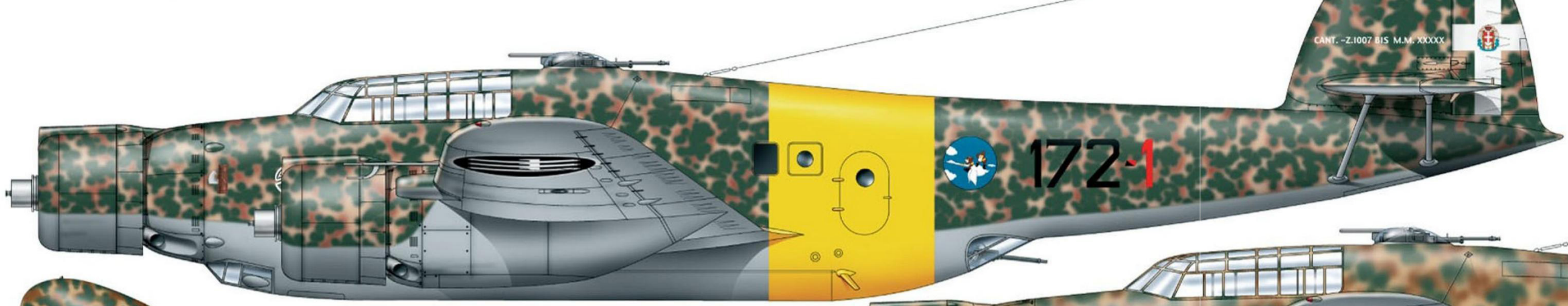
Right: Fiat CR.42, MM.432, 85-9, 85ˆ Squadriglia, 18º Gruppo, 56º Stormo, CAI, Maldegem (Belgium), November 1940. Wide Giallo Cromo mid-fuselage band

Below Left: Fiat CR.42, MM.6876, 85-16, flown by Sergente Antonio Lazzari, 85ˆ Squadriglia, 20º Gruppo, 56º Stormo, CAI, Belgium, November 1940. Shot down on 11 November 1940 near Corton Railway Station

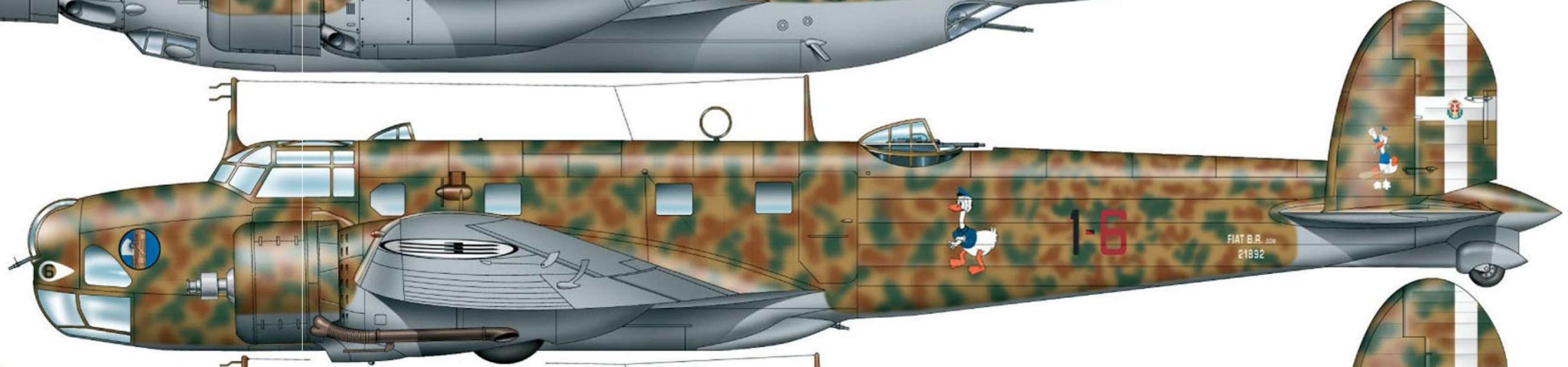
Below: Fiat CR.42, MM.5699, 85-12, flown by Sergente Cavallar, 85ˆ Squadriglia, 18º Gruppo, 56º Stormo, CAI, Belgium, November 1940. Green spinner; this is how 85-12 appeared on arriving in Belgium when Cavallari ground looped his CR.42, which ended on its nose

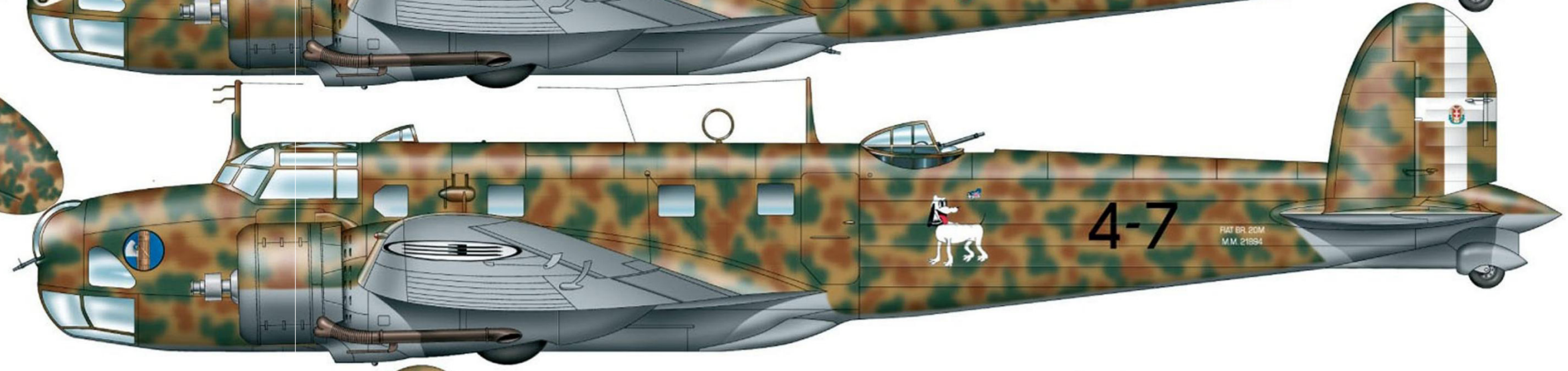
1:72 Scale
0 metres 1 2
0 feet 3 6

Cant Z.1007bis, 172-1, 172^ Squadriglia Ricognizione Strategica Terrestre, CAI, Chièvres (Belgium), October 1940. Giallo Mimetico 3, Marrone Mimetico 2 and Verde Mimetico 3 uppersurfaces with Grigio Mimetico undersides. Giallo Cromo fuselage band; wing markings with white background above and white on black underneath. Code in black and red; unit marking on fuselage sides (both sides)



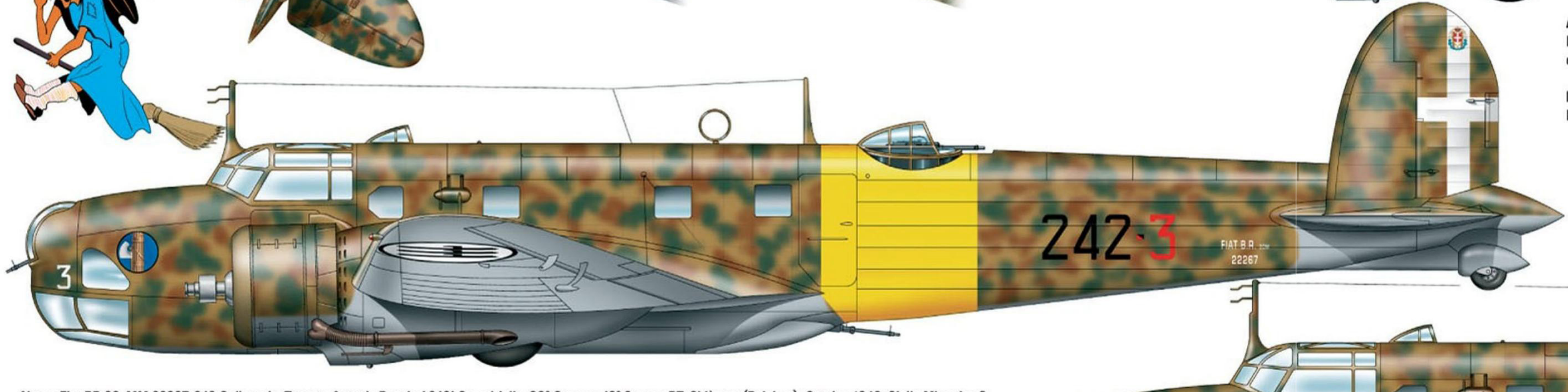
Below: Cant Z.1007bis, MM.22148/172-4, 172^ Squadriglia Ricognizione Strategica Terrestre, CAI, Chièvres (Belgium), October 1940. Giallo Mimetico 3, Marrone Mimetico 2 and Verde Mimetico 3 uppersurfaces with Grigio Mimetico undersides. Wing markings with white background above and white on black underneath. Code in black and red; unit marking on fuselage sides (both sides)

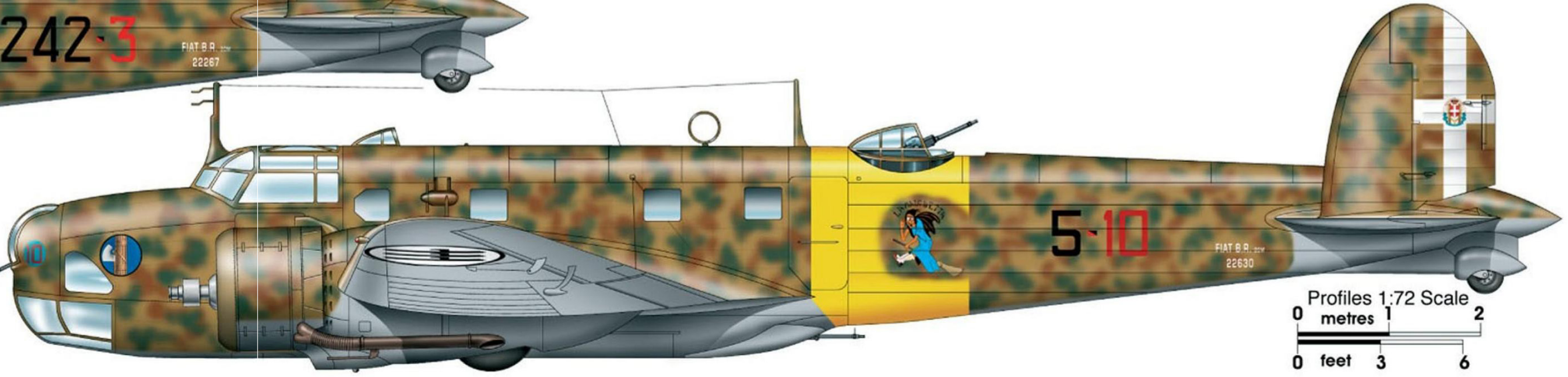




Above: Fiat BR.20M, MM.21892, 1-6, 1^ Squadriglia, 11° Gruppo, 13° Stormo B.T., Melsbroek (Belgium), November 1940. Giallo Mimetico 3, Verde Mimetico 3 and Marrone Mimetico 2 upper surfaces; Grigio Mimetico undersides. White background to national markings in four wing positions. '6' repeated on nose; note two version of 'Donald Duck', one on fuselage and another on fin

Immediately Above: Fiat BR.20M, MM.21894, 4-7, 4^ Squadriglia, 11° Gruppo, 13° Stormo, CAI, Melsbroek, Belgium, November 1940. Giallo Mimetico 3, Verde Mimetico 3 and Marrone Mimetico upper surfaces; Grigio Mimetico undersides. National markings with white backing in four wing positions; codes in black. Unit badge on both sides





Above: Fiat BR.20, MM.22267, 242-3, flown by Tenente Antonio Poggi of 242^ Squadriglia, 99° Gruppo, 43° Stormo BT, Chièvres (Belgium), October 1940. Giallo Mimetico 3, Verde Mimetico 3 and Marrone Mimetico 2 upper surfaces with Grigio Mimetico undersides; Giallo Cromo mid-fuselage band. Codes in black and red, serial in white; '3' repeated in white on nose. White backing to national markings in four wing positions

Right: Fiat BR.20M, MM.22630, 5-10, flown by Tenente Dino Bossi, 5^ Squadriglia, 43° Gruppo, 13° Stormo BT, CAI, Melsbroei (Belgium), October 1940. Giallo Mimetico 3, Verde Mimetico 3 and Marrone Mimetico 2 upper surfaces with Grigio Mimetico undersides; Giallo Cromo mid-fuselage band. Codes in black and red; 'La Maledetta' badge on fuselage sides. White background to national markings in four wing positions

Left: Fiat G.50, MM.5372, 20ºGR, flown by Maggiore Mario Bonzano, Commander of the XXº Gruppo (56º Stormo – known as 20./JG56 by the Luftwaffe), CAI, Ursel (Belgium) October 1940. Giallo Mimetico1, Verde Mimetico 1 and Marrone Mimetico 2 uppersurfaces; Grigio Mimetico undersides. Giallo Cromo cowl front and spinner; command pennant aft of cockpit. No national markings above the wings. The finish of G.50s operating in this theatre suffered immensely from weathering with paint flaked off on extensive areas of the fuselage

Left: Same aircraft with a wide Giallo Cromo band around the fuselage; note red disc on main undercarriage doors

Right: Fiat G. 50, 531-2, 531ˆ Squadriglia, 20º Gruppo, 56º Stormo, CAI, Ursel (Belgium), November 1940. Giallo Mimetico 3, Verde Mimetico 3 and Marrone Mimetico 2 upper surfaces; Grigio Mimetico undersides. White spinner, yellow fuselage band; black/red codes. No national markings above the wings

Fiat G.50, 352-1, 352ˆ Squadriglia, 20º Gruppo, 56º Stormo, CAI, Belgium, October 1940. Giallo Mimetico 3, Verde Mimetico 3, Marrone Mimetico 2 upper surfaces with Grigio Mimetico undersides; black/red codes. White background to wing markings under the wings, no national markings above wings; unit badge on fin

Fiat G.50, MM.5403, 352-13, 352ˆ Squadriglia, 20º Gruppo, 56º Stormo, CAI, Belgium, October 1940. Standard finish; black/red codes. Giallo Cromo spinner and front of cowling; white background to wing markings under the wings, no national markings above wings. Unit badge on fin

Fiat G.50, MM.5450, 353-4, 353ˆ Squadriglia, 20º Gruppo, 56º Stormo, CAI, Belgium, October 1940. Giallo Mimetico 3, Verde Mimetico 3 and Marrone Mimetico 2 upper surfaces with Grigio Mimetico undersides; black/red codes. White background to wing markings below wings, no national markings above wings. Unit badge on fin

Caproni Ca.133T. 85CT, 85ˆ Squadriglia, 20º Gruppo, 56º Stormo, CAI, Ursel (Belgium), October 1940. Giallo Mimetico 3, Verde Mimetico 3 and Marrone Mimetico 2 upper surfaces with Grigio Mimetico undersides; Giallo Cromo codes with black drop shadow. White background to national markings above the wings, reversed below with black background and white markings

Caproni Ca.133T, 352ˆ Aquadriglia, 20º Gruppo, 56º Stormo, CAI, Maldegem (Belgium), October 1940. Giallo Mimetico 3, Verde Mimetico 3 and Marrone Mimetico 2 upper surfaces with Grigio Mimetico undersides; Giallo Cromo band around fuselage. White background to wing markings above wings, reversed black on white below wings; 51º Gruppo 'cat & mice' badge on fin

1:72 Scale
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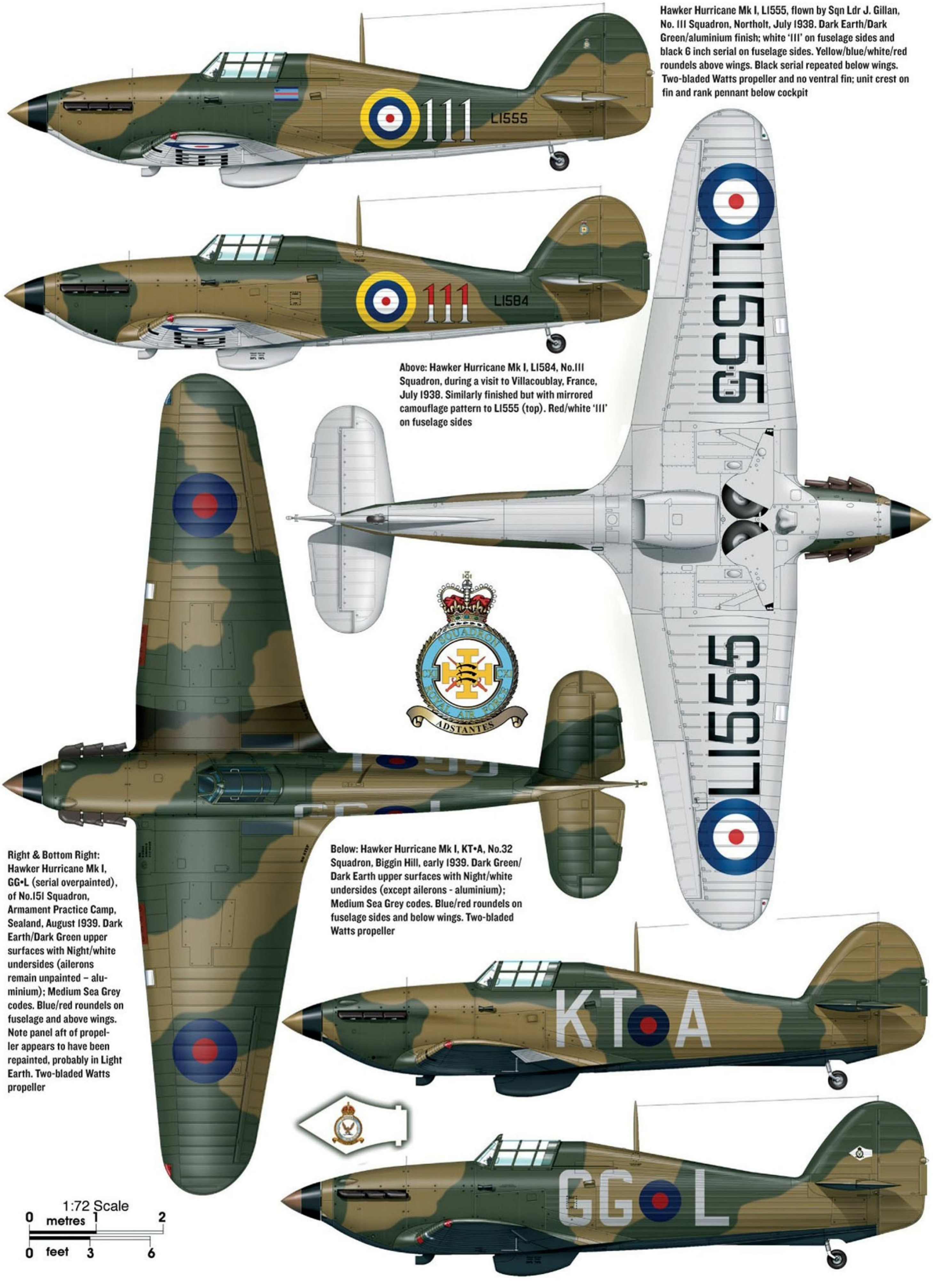


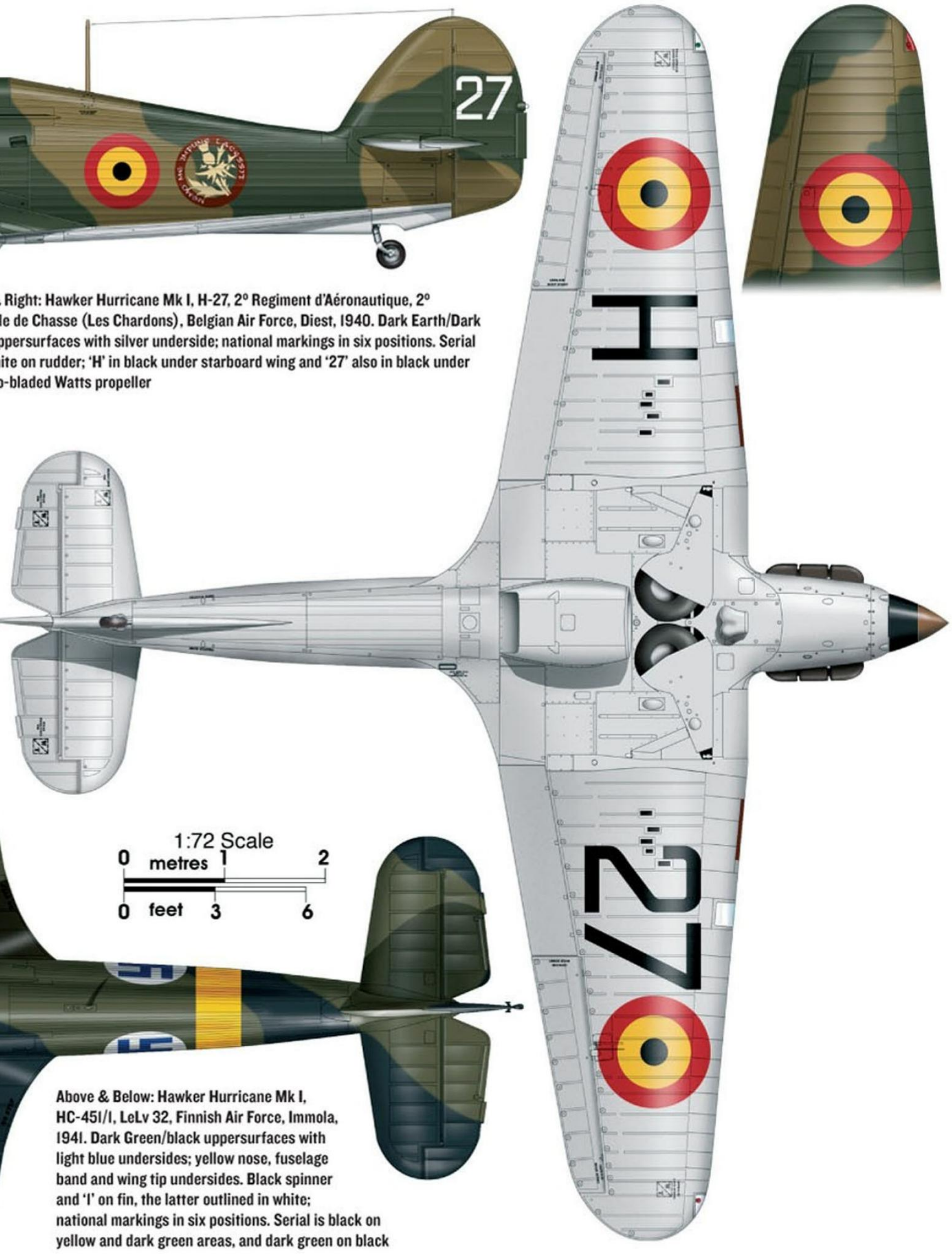
Hawker Hurricane Mk I, L1555, flown by Sqn Ldr J. Gillan, No. 111 Squadron, Northolt, July 1938. Dark Earth/Dark Green/aluminium finish; white '111' on fuselage sides and black 6 inch serial on fuselage sides. Yellow/blue/white/red roundels above wings. Black serial repeated below wings. Two-bladed Watts propeller and no ventral fin; unit crest on fin and rank pennant below cockpit

Above: Hawker Hurricane Mk I, L1584, No.111 Squadron, during a visit to Villacoublay, France, July 1938. Similarly finished but with mirrored camouflage pattern to L1555 (top). Red/white '111' on fuselage sides

Right & Bottom Right: Hawker Hurricane Mk I, GG•L (serial overpainted), of No.151 Squadron, Armament Practice Camp, Sealand, August 1939. Dark Earth/Dark Green upper surfaces with Night/white undersides (ailerons remain unpainted – aluminium); Medium Sea Grey codes. Blue/red roundels on fuselage and above wings. Note panel aft of propeller appears to have been repainted, probably in Light Earth. Two-bladed Watts propeller

Below: Hawker Hurricane Mk I, KT•A, No.32 Squadron, Biggin Hill, early 1939. Dark Green/Dark Earth upper surfaces with Night/white undersides (except ailerons - aluminium); Medium Sea Grey codes. Blue/red roundels on fuselage sides and below wings. Two-bladed Watts propeller

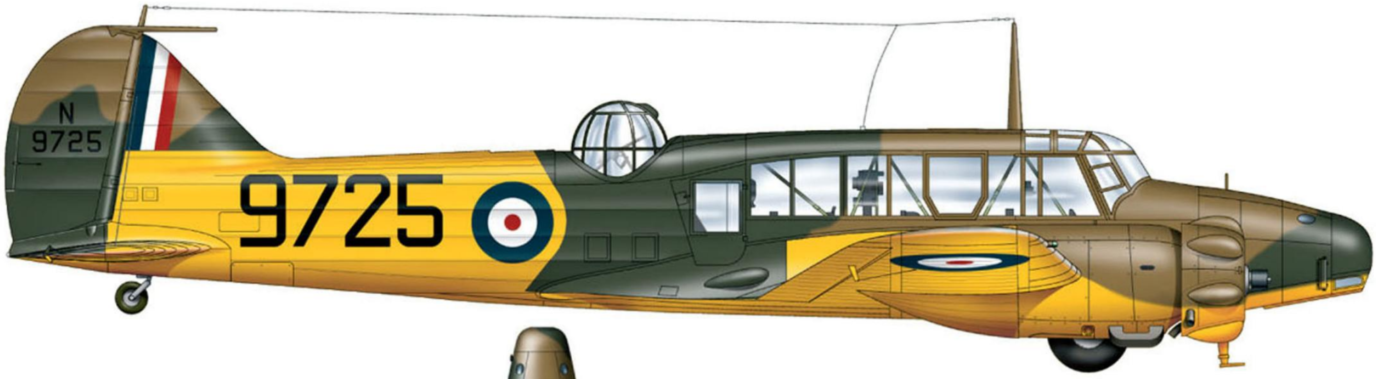
Above & Right: Hawker Hurricane Mk I, H-27, 2º Regiment d'Aéronautique, 2º Escadrille de Chasse (Les Chardons), Belgian Air Force, Diest, 1940. Dark Earth/Dark Green uppersurfaces with silver underside; national markings in six positions. Serial 27 in white on rudder; 'H' in black under starboard wing and '27' also in black under port. two-bladed Watts propeller

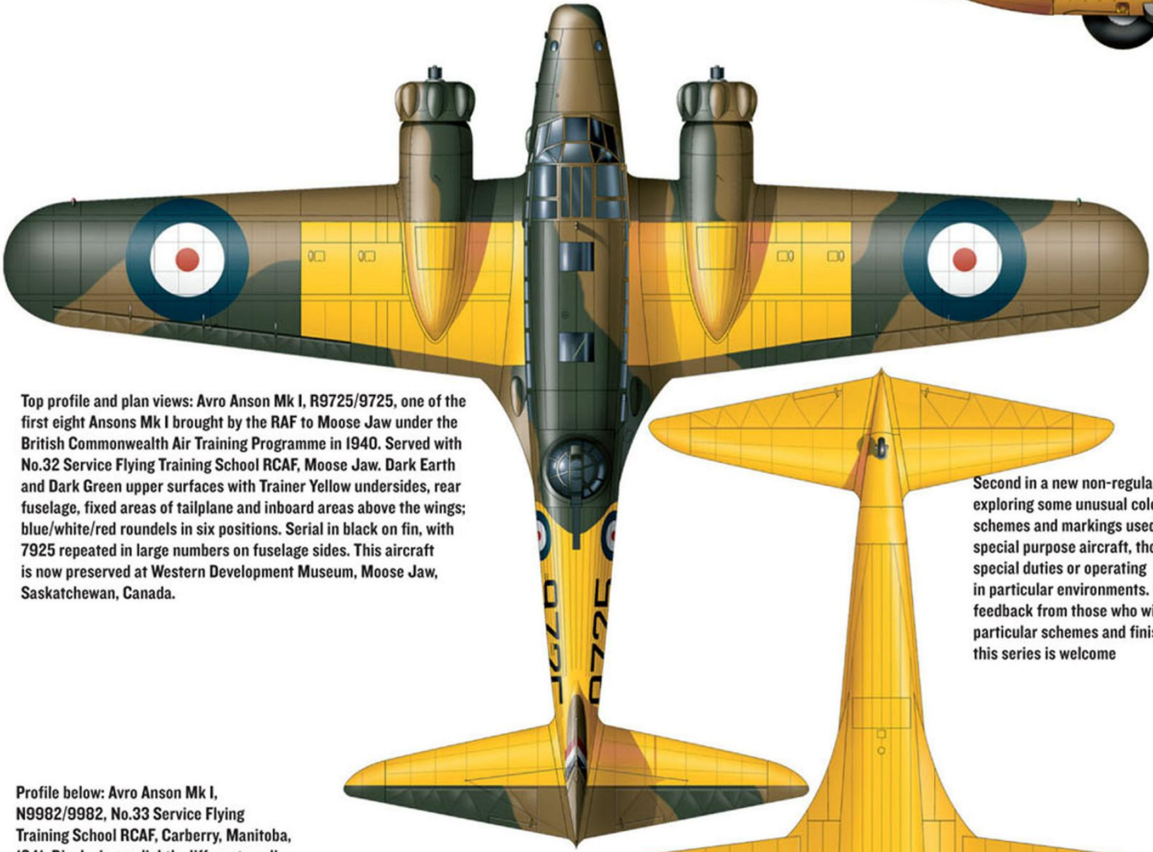


Above & Below: Hawker Hurricane Mk I, HC-451/I, LeLv 32, Finnish Air Force, Immola, 1941. Dark Green/black uppersurfaces with light blue undersides; yellow nose, fuselage band and wing tip undersides. Black spinner and 'I' on fin, the latter outlined in white; national markings in six positions. Serial is black on yellow and dark green areas, and dark green on black areas

Bottom: Hawker Hurricane Mk I, ex-BR2337, Iº Centro Sperimentale, Guidonia, September 1941 (ex-Yugoslav AF machine captured at Mostar). Giallo Mimetico 2, Marrone Mimetico 2, Verde Mimetico 3 upper surfaces with Grigio Mimetico undersides; Giallo Cromo engine cowling and black spinner. White fuselage band and cross on rudder; black wing 'fasci' above and below wings on a white background

ANTI-CAMOUFLAGE - 2

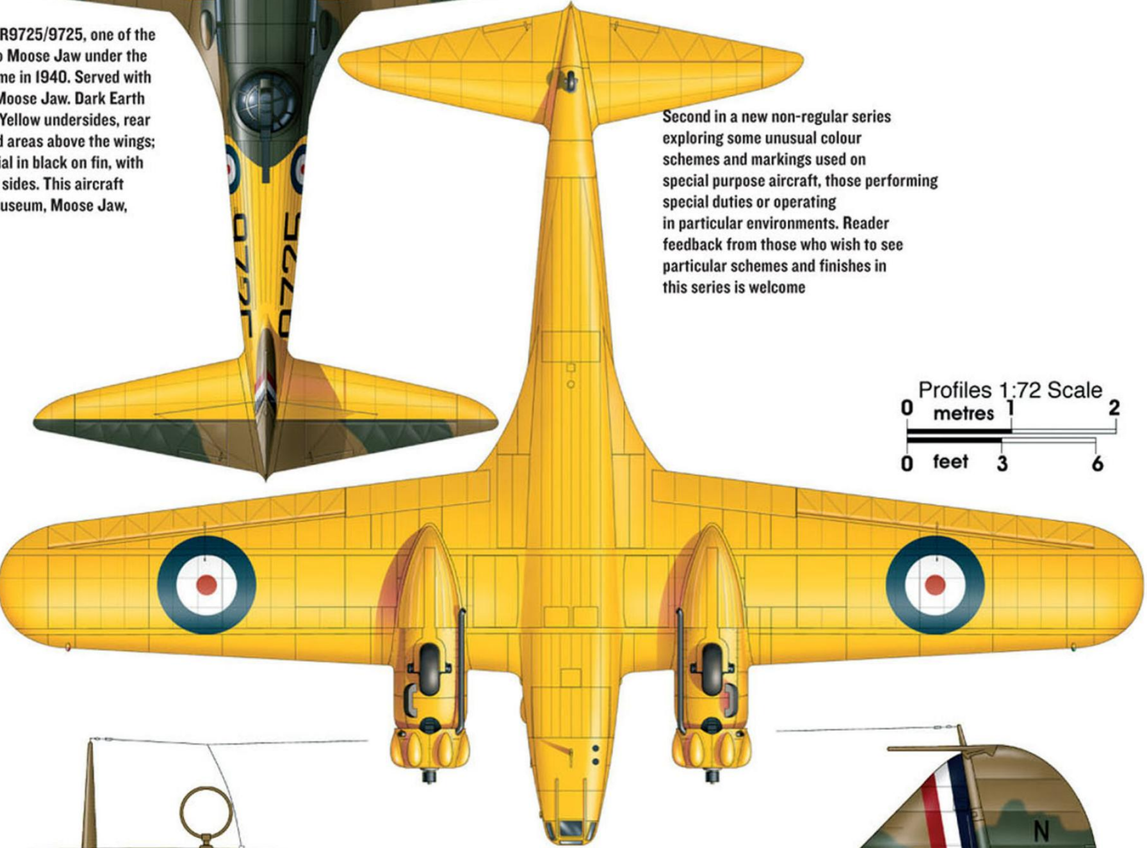




Model AIRPLANE INTERNATIONAL Original Artwork by Richard J. Caruana © MAI 2010

Top profile and plan views: Avro Anson Mk I, R9725/9725, one of the first eight Ansons Mk I brought by the RAF to Moose Jaw under the British Commonwealth Air Training Programme in 1940. Served with No.32 Service Flying Training School RCAF, Moose Jaw. Dark Earth and Dark Green upper surfaces with Trainer Yellow undersides, rear fuselage, fixed areas of tailplane and inboard areas above the wings; blue/white/red roundels in six positions. Serial in black on fin, with 7925 repeated in large numbers on fuselage sides. This aircraft is now preserved at Western Development Museum, Moose Jaw, Saskatchewan, Canada.

Second in a new non-regular series exploring some unusual colour schemes and markings used on special purpose aircraft, those performing special duties or operating in particular environments. Reader feedback from those who wish to see particular schemes and finishes in this series is welcome



Profiles 1:72 Scale
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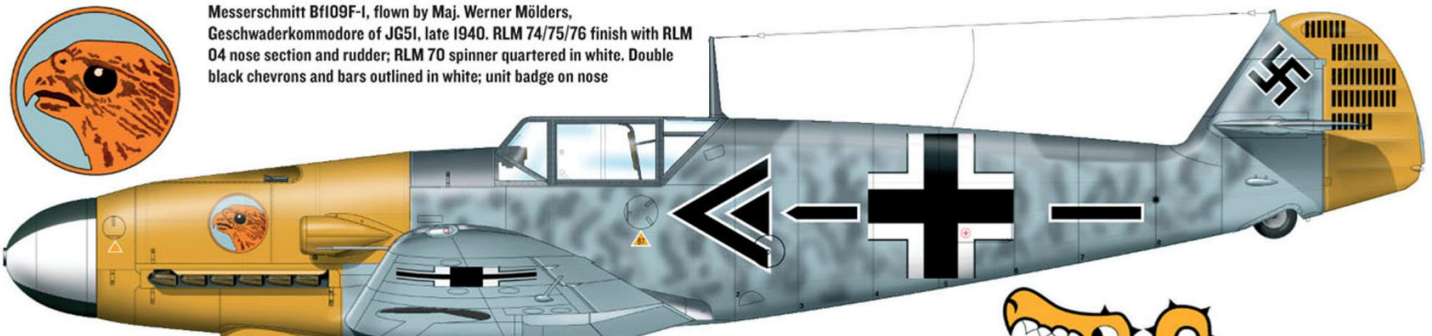
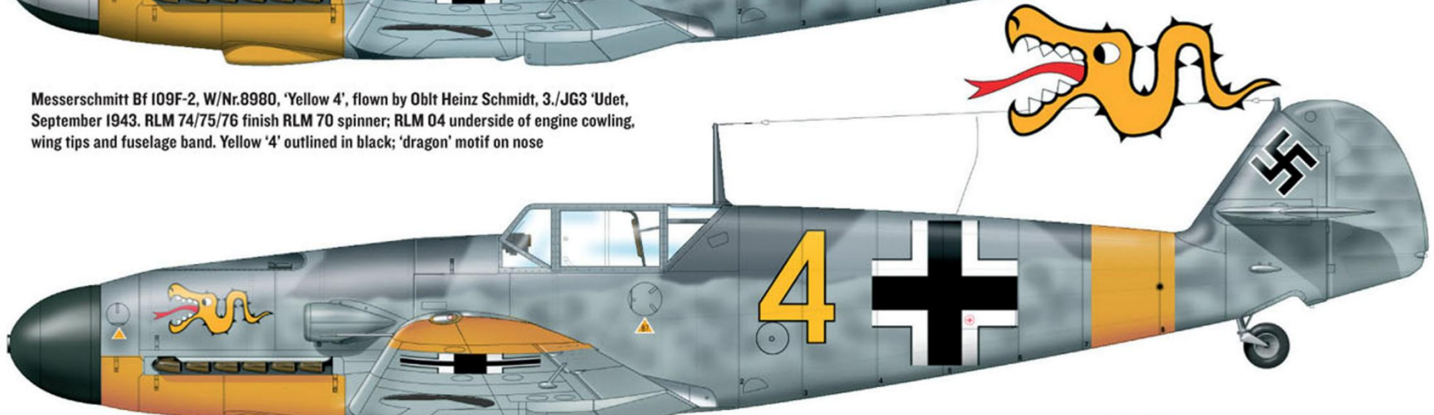
Profile below: Avro Anson Mk I, N9982/9982, No.33 Service Flying Training School RCAF, Carberry, Manitoba, 1941. Displaying a slightly different application of the yellow areas: Dark Earth and Dark Green uppersurfaces with Trainer Yellow undersides, rear fuselage, fixed areas of tailplane and inboard areas above wings; blue/white/red roundels in six positions. Serial on fin in black, '9982' being repeated in large figures on rear fuselage

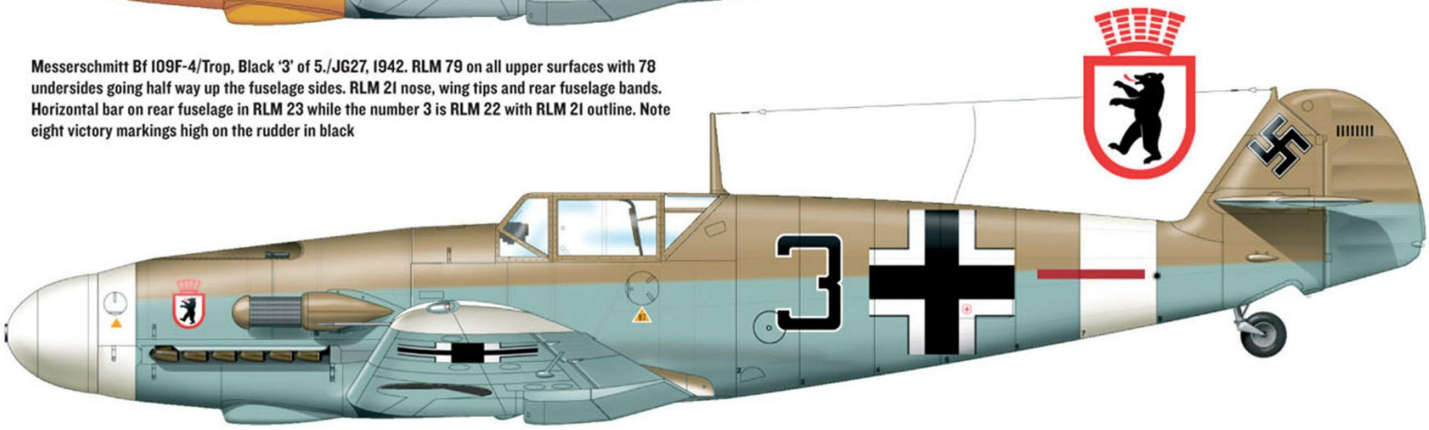
Messerschmitt Bf109F-1, flown by Maj. Werner Mölders, Geschwaderkommodore of JG51, late 1940. RLM 74/75/76 finish with RLM 04 nose section and rudder; RLM 70 spinner quartered in white. Double black chevrons and bars outlined in white; unit badge on nose



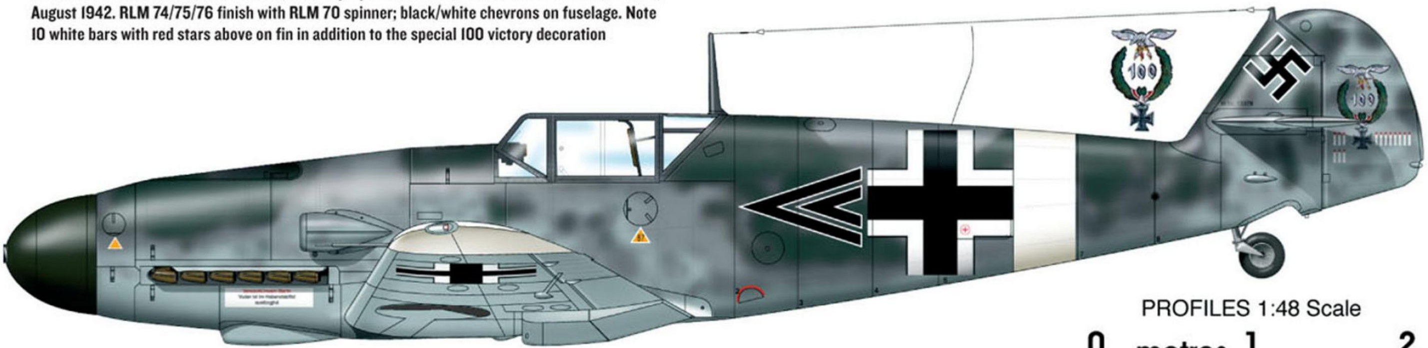
Messerschmitt Bf 109F-2, W/Nr.8980, 'Yellow 4', flown by Oblt Heinz Schmidt, 3./JG3 'Udet, September 1943. RLM 74/75/76 finish RLM 70 spinner; RLM 04 underside of engine cowling, wing tips and fuselage band. Yellow '4' outlined in black; 'dragon' motif on nose

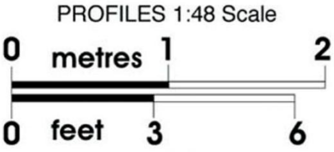


Messerschmitt Bf 109F-4/Trop, Black '3' of 5./JG27, 1942. RLM 79 on all upper surfaces with 78 undersides going half way up the fuselage sides. RLM 21 nose, wing tips and rear fuselage bands. Horizontal bar on rear fuselage in RLM 23 while the number 3 is RLM 22 with RLM 21 outline. Note eight victory markings high on the rudder in black

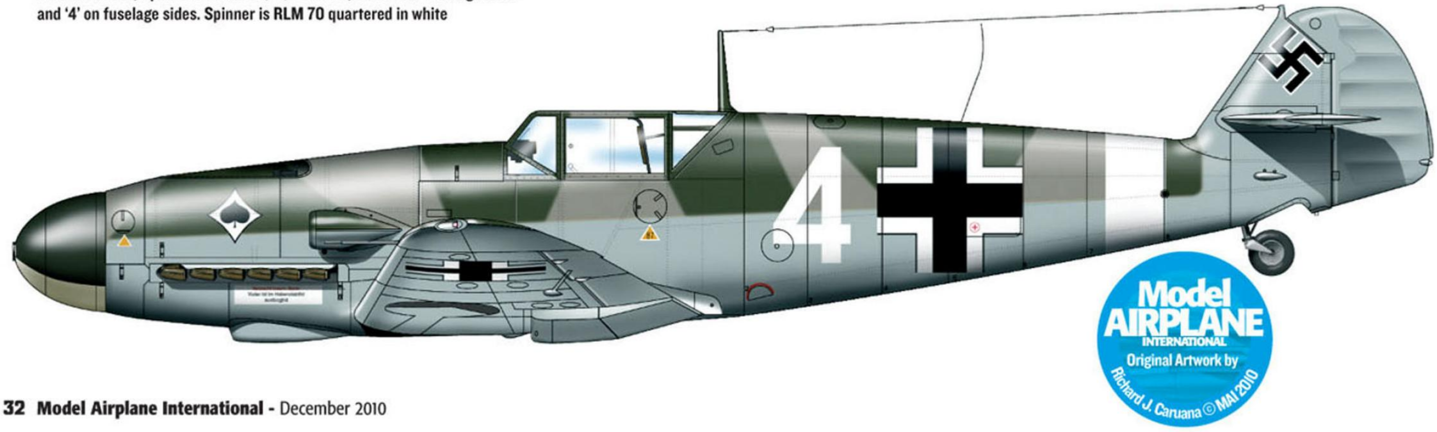


Messerschmitt Bf 109F-4, W/Nr. 13376, flown by Hptm. Heinz Bär, Kommandeur I./JG 77, Comiso, August 1942. RLM 74/75/76 finish with RLM 70 spinner; black/white chevrons on fuselage. Note 10 white bars with red stars above on fin in addition to the special 100 victory decoration

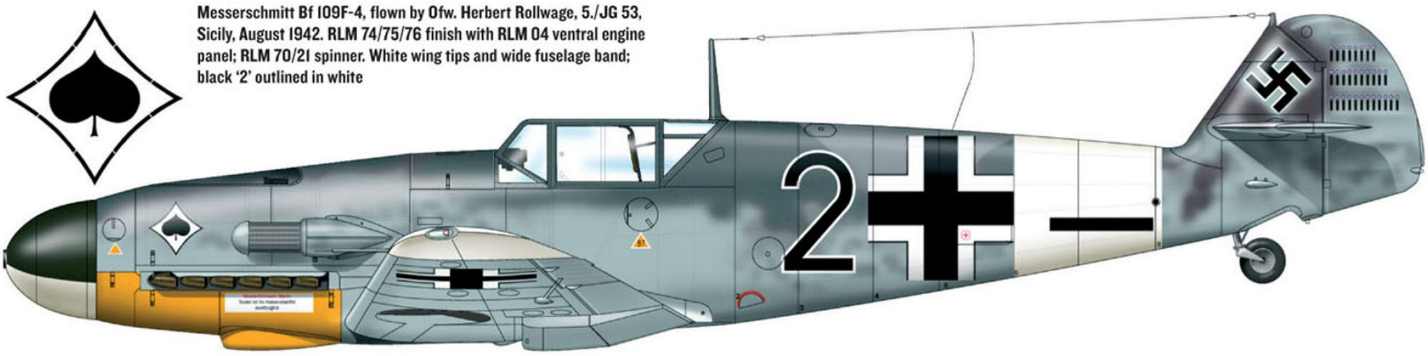




Messerschmitt Bf 109F-4/Z, 'White 4', 4./JG 53, operating in the Mediterranean, April 1942. RLM 02/71/65 finish; white rear fuselage band and '4' on fuselage sides. Spinner is RLM 70 quartered in white



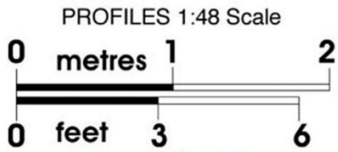
Messerschmitt Bf 109F-4, flown by Ofw. Herbert Rollwage, 5./JG 53, Sicily, August 1942. RLM 74/75/76 finish with RLM 04 ventral engine panel; RLM 70/21 spinner. White wing tips and wide fuselage band; black '2' outlined in white



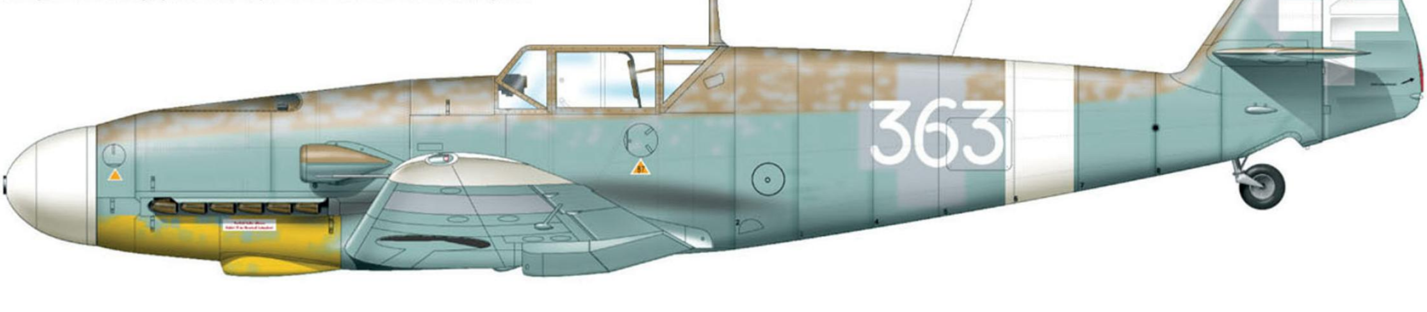
Messerschmitt Bf 109F, 'Yellow 12', 6./JG3, Sicily, February 1942. Sandgelb RLM 79/Olivgrün RLM80 upper surfaces with Hellblau RLM 78 undersides; RLM 27 Gelb spinner front, lower engine cowling cover. RLM 27 '12' and horizontal bar, thinly outlined in black; unit badge ahead of windscreen

Messerschmitt Bf 109F-4/Trop, Yellow '14' of 3.JG27 flown by the ace Hans-Joachim Marseille. The aircraft is painted RLM 79 on all upper surfaces with 78 undersides. The nose area, wing tips and rear fuselage band are in RLM 21 while the number 14 and the tally on the rudder are in RLM 04

Messerschmitt Bf 109F-4/Trop, 'White 3' of 7./JG27, 1942. RLM 79 on uppersurfaces with large sparse mottles in RLM 80. Undersides are in RLM 78. RLM 21 nose, wing tips and rear fuselage band, vertical bar on rear fuselage and number 3, which is also outlined in RLM 22



Messerschmitt Bf 109F-4, W/Nr.13260, 363a Squadriglia, 150° Gruppo Autonomo C.T., Sciacca (Sicily), June 1943. RLM 78/79 finish with the Sandgelb area toned down with Grigio Azzurro Chiaro; all German markings covered in Grigio Azzurro Chiaro. Codes, spinner, rear fuselage band and wing tips in white; very faded RLM 27 Gelb ventral cowling area



FAIREY FLYCATCHER

An unidentified Fairey Flycatcher in a classic style of contemporary photograph. Slightly discernable is the light blue band identifying the carrier as HMS Courageous (R.J. Caruana Archives)

When the Air Ministry issued Specification 6/22, calling for a single-seat fighter capable of operating from carrier decks, it was making up for years of neglect that saw the single aircraft carrier then in service, HMS Argus, operating a motley collection of types of World War One vintage. The Flycatcher was to provide British naval aviation with a much-needed shot in the arm, equipping the fledging Fleet Air Arm with a superb fighting machine.

Apart from the ability to operate from carrier decks, Specification 6/22 also required that the new aircraft could be fitted with floats enabling it to operate from water, or as an amphibian. Power was to be supplied by either the Bristol Jupiter or the Armstrong Siddeley Jaguar, both of which were air-cooled radial engines. A radial in place of a rotary engines still widely in use signified a quantum leap over the types the new fighter would be replacing for carrier deck operations, such as the Nieuport Nightjar.

Two aviation companies responded to the Air Ministry's request, Parnall with its Plover and Fairey with the Flycatcher. While both aircraft appeared very similar, both externally and in their performance parameters, Fairey's fighter scored higher where overall strength of the airframe was concerned, a feature that weighed heavily in its favour.

However, the Plover had a head start over Fairey's new fighter with three prototypes (N160, 161 & 162) ordered on 8 March 1922 (initially to Specification 7/21), all of which were powered by different engines. Eventually three Parnall Plovers were ordered in January 1923 (N9608-9610), followed by a further 12 (to Specification 27/23) a year later (N9697-9708). It would appear that the Air Ministry looked upon this short run as a stop-gap measure until Flycatcher deliveries could commence. Two Flights (Nos.403 and 404), which by mid-year 1923 were equipped with the Plover, eventually received Flycatchers within 18 months.

DESIGN OF A FLEET FIGHTER

Fairey entrusted the design of the new Fleet Fighter to F. Duncanson, who produced an angular, but functional design where the hallmark seemed to be simplicity in production. The Flycatcher's wings and tailplane consisted of a wooden framework, covered in fabric. A mixed construction of metal and wood was used for the fuselage, resulting in an extremely rugged airframe. Power for the first prototype (N163) was provided by a 350hp Armstrong Siddeley Jaguar II engine. Overall dimensions were kept within the limitations dictated by carrier deck lifts thus eliminating the need for folding wings, although the entire aircraft could be dismantled in such a way that no section exceeded 4.11m in length.

It also featured Fairey's patent camber-changing mechanism on the wings, well-established on such previous types as the Hamble Baby, the Fairey IIID and IIIF. Flaps ran along the entire trailing edge of both upper and lower wings, with the outer sections serving also as ailerons. With such 'barndoor' flaps (as they became known) lowered, both landing and take-off runs were considerably shortened.

Test pilot Lt Col Vincent Nicholl performed the first flight on 28 November 1922, after which the aircraft was delivered for service trials at the Aircraft Experimental Establishment (AEE), Martlesham Heath. These trials appear to have taken place between 6 January and 9 February 1923. During these tests flown by Fl Lt Orlebar and F/O Bird, unstick distance was a mere 121 yards, but it could be reduced by half with flaps set at 8°. With the same setting, the aircraft could be flown at 47mph (75.6km/h) while maximum speed in clean condition was 133mph (214.67km/h) at 5,000ft (1520m). The aircraft proved very stable both laterally and longitudinally, while control remained very good in a steep dive.

The report also highlighted some of the Flycatcher's positive qualities, such as the view from the cockpit, the controllability at slow speeds and efficiency of the flap gear, and the undercarriage's shock absorber gear.

Following these tests, the prototype was transferred to the Development Flight at Gosport, which was responsible for carrier trials aboard HMS Argus on 2 March. Steel jaws were fitted to the undercarriage spreader bar, a standard contemporary means of engaging arrester wires transversely arranged on carrier decks. A few days later, comparative trials were conducted with the Plover, where the Flycatcher displayed its overall superiority and spelt the demise of Parnall's fighter.

On its return to Fairey's later in March, N163 was re-engined with a Jupiter IV, and it was in this form that it was displayed at the New Types Park (bearing No. 8) at the Hendon Display of July 1923. Meanwhile, Vincent Nicholl had flown the second prototype (N164) on 5 May 1923. Of particular interest is the experimental fitting later that same year of a cowl on this aircraft, which partially enclosed the Jaguar II engine. This was also the first Flycatcher to be fitted with floats, in October 1924, at Lee-on-Solent. The following month, it was re-engined with a 425hp Jaguar IV, the power plant that was to become standard on production aircraft. N165, the third prototype, was completed as an amphibian and flew in the second half of 1923; wheels were fitted to the planing bottom of the floats. It actually performed deck-landing trials in this form on HMS Argus on 3 November 1923. A long series of water tests eventually established that fin and rudder areas had to be modified on subsequent aircraft, while sometime during 1925 this aircraft was also re-engined with the Jaguar IV.

In 1926, another Flycatcher was ordered for development purposes. N216 was, in fact, designated Flycatcher Mk.II; built to Specification 32/26, it was fitted with a 425hp Jaguar IV, and flew for the first time on 4 October 1926. By

July of the following year it had been re-engined with a Jaguar VIII, and performed deck landing trials on board HMS Furious as from the 20th of the same month. By the middle of August, it was back at Fairey's where it was fitted with floats of the manufacturer's design until it returned from AEE trials to be re-engined with a Mercury I and wheeled undercarriage. It testing days came to an end when it crashed on 8 May 1929 due to its Mercury IIA engine cutting off after take-off from Gosport.

INTO PRODUCTION AND SERVICE

Fairey's factory at Hayes went into full Flycatcher production in 1923, and on 1 April of the same year, No.402 (Fleet Fighter) Flight became the first to be formed with the type when it received six examples at Leuchars. The Flight embarked on HMS Eagle, which joined the Mediterranean Fleet in May of the following year, using Hal Far (Malta) as shore base. By that time, No.401 Flight had also been equipped with Flycatchers in place of the Nightjars it had operated from HMS Argus.

July 1924 saw Flight Nos.403 and 404 relinquishing their Parnall Plovers for the much superior Flycatcher, the former unit operating from HMS Hermes, while the latter operated from HMS Furious. This was a time when the Fleet Air Arm was going through a vast re-equipment programme that would bring the total number of carriers in service up to six. The brand-new Hermes joined the Mediterranean Fleet in November 1924 to relieve HMS Eagle, and as customary, its Flycatchers became a familiar sight with the Maltese living around the southern part of the Island. HMS Furious reappeared in September 1925 after a four-year modernisation programme while HMS Courageous was commissioned in May 1928. HMS Glorious was ready to take on No.406 and 408 Flights with Flycatchers in March of 1930.

Flights moved from one carrier to another, according to operational needs. No.401 Flight served on HMS Argus, Hermes and Courageous, until it became No.801 Squadron on 3 April 1933, when the unit began to fly a mix of Flycatchers and Hawker Nimrods, whilst serving on HMS Furious. No.402 Flight served on HMS Eagle and Courageous; No.403 on HMS Hermes (with some aircraft attached to the 5th Cruiser Squadron), No.404 on HMS Furious, Argus and Courageous; No.405 on Furious and Glorious; No.406 on HMS Glorious, Furious and Hermes; No.407 on HMS Courageous and Furious; and No.408 on board HMS Glorious.

During its period of service, the Flycatcher was required to perform duties beyond those of pure Fleet Fighter. It was fitted with racks enabling it to carry four 20lb (9kg) bombs under the lower wings for dive bombing duties. This was only possible thanks to the aircraft's strong airframe that could withstand a vertical dive with the Jaguar engine running at full throttle. Such dives became highlights of Hendon displays in 1928 and 1929, when three Flycatchers would dive simultaneously from 2,000ft (608m) from three different sides of the airfield, to converge and bomb the same target.

Similar displays were held also at the main land-base station in the Mediterranean, Hal Far airfield at Malta. The 'Malta Herald' of 18 June 1928 provides a vivid account of a Royal Air Force 'At Home' display which began with a "massed Vee formation consisting of Bisons, Fairey IIID Floatplanes, Darts and Flycatchers [which] flew over in a circle and, on a Very Light signal, broke up into flights to recross the aerodrome from different directions three minutes later". This was followed by an 'air combat' between a Bison and a pair of Flycatchers. "One of the Flycatchers burst into flames [using Holt Flares and Stamnic Chloride to generate smoke] and spun to the ground". Hal Far was a unique site for such a stunt, as its southern edge ends in a sheer cliff, dropping over a couple of hundred feet down to the sea, thus providing the 'shot-down' aircraft with a natural hiding place.

However, the most impressive display of the day was a simulated bomb attack. Since some buildings were being pulled down for a planned extension of the airfield, a house was left standing to be bombed in full view of the public present!

Hal Far will not only remember the Flycatcher for its public displays. It was from here that this fighter began its career at a land-based station, and it was also flying from Hal Far that the first night landing on a carrier deck was performed, on board HMS Courageous on 26 November 1929.

Apart from its inherent strength, the Flycatcher was a fighter pilot's dream come true, leaving an enduring impression on all those who flew it. It was relatively comfortable to fly, handled easily all carrier operations, but above all possessed superb aerobatic qualities. Controls were described as being neither too light nor too heavy. Lacking any major vices, the Flycatcher could be flown by the majority of pilots then in service without difficulty. No wonder, therefore, that it became one of the most popular fighters ever to serve with British units. With a career spanning from 1923 to 1935, until superseded by the Hawker Nimrod, it served with every aircraft-carrier of the period, with the Home Fleet, the Mediterranean Fleet and on the China Station. In April 1935, the Air Ministry officially declared the Flycatcher obsolete; an important and very colourful era in naval flying had come to an end, one that was born at the very same time as the Fleet Air Arm.

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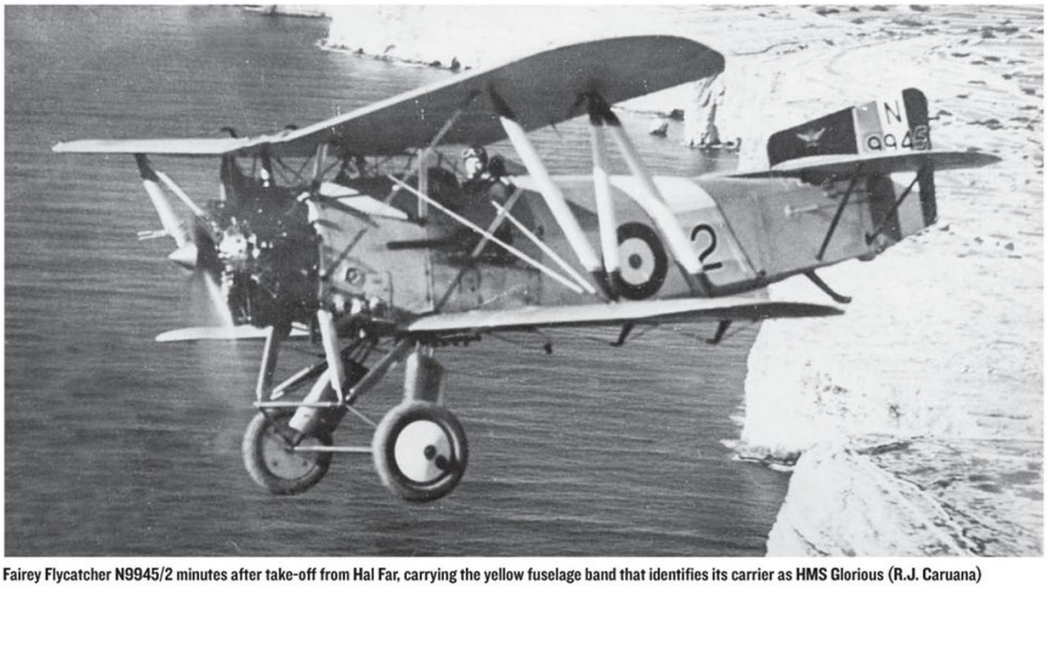
Fairey Flycatcher amphibian N9664 that was allocated to the Station Flight Hal Far, Malta, in 1924. It is here seen over Grand Harbour with the Admiralty Dockyard in the foreground and the Valletta peninsula as backdrop. In 1927 this aircraft was transferred to No.402 Flight on board HMS Eagle refitted with wheeled undercarriage (R.J. Caruana)



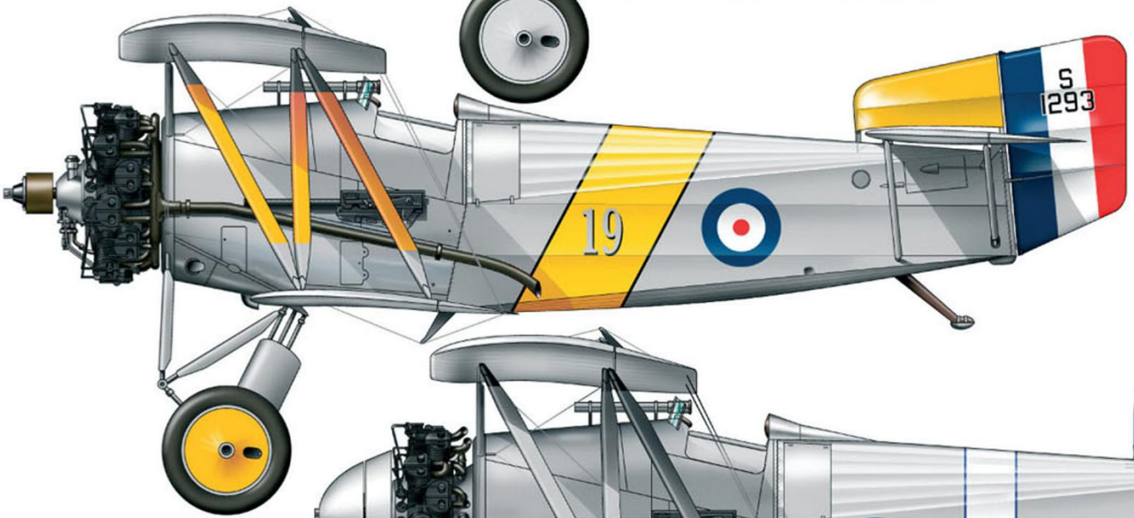
Fairey Flycatcher N9945/2 minutes after take-off from Hal Far, carrying the yellow fuselage band that identifies its carrier as HMS Glorious (R.J. Caruana)

Fairey Flycatcher N9611/1, No.402 Flight, HMS Eagle, 1924. The standard finish for this type consisted of Silver dope overall except for the metal areas around the front fuselage which were left in their natural state, and at times highly polished. Black Carrier colour band with silver '1' on fuselage sides; black motif on wheel covers. Black struts

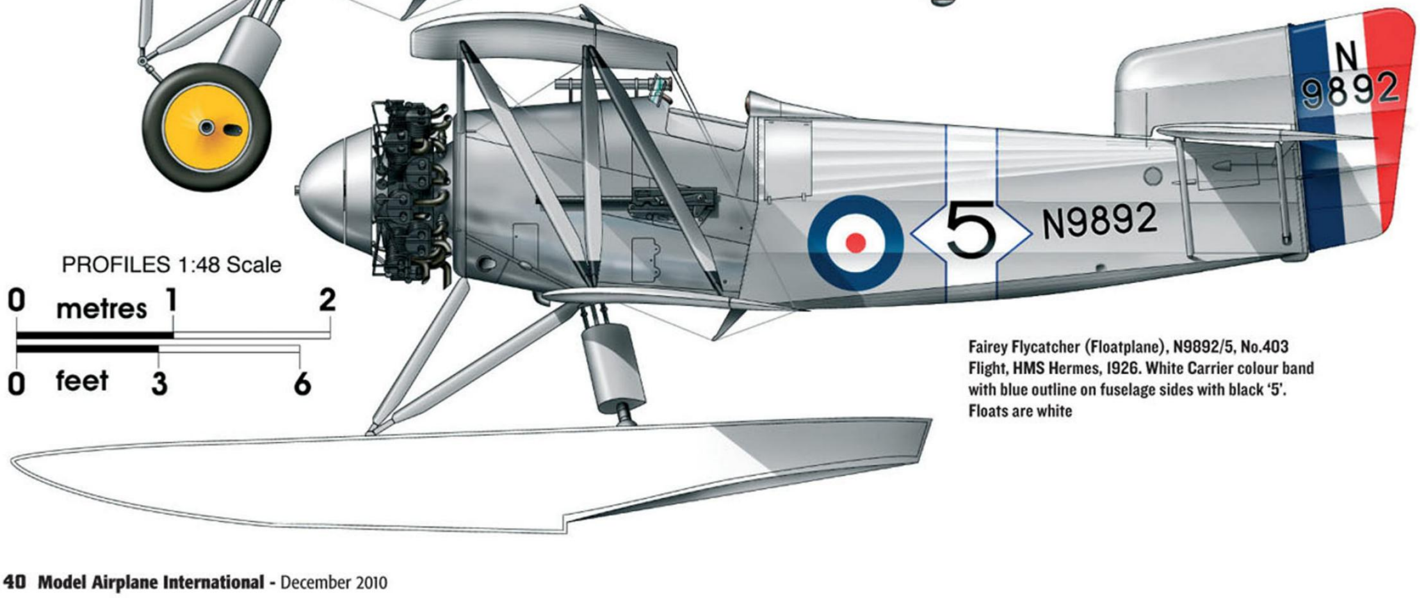
Fairey Flycatcher N9680/1, No.401 Flight, HMS Argus, 1924. Green Carrier colour band on fuselage side with black '1', outlined in white

Model AIRPLANE INTERNATIONAL Original Artwork by Richard J. Caruana © MAI 2010

Above: Fairey Flycatcher, N9679/13, No.404 Flight, HMS Courageous, 1928. Light blue Carrier colour on all top fuselage decking; also on fuselage band and struts, outlined in white. '13' in white, thinly outlined in black. Note different styles of serial presentation between rudder and fuselage



Left: Fairey Flycatcher S1293/19, No.405 Flight, HMS Glorious, Malta, 1930. Yellow Carrier colour band, edged in black, around fuselage; yellow fin, wing struts and wheel covers. Silver '19' with black drop shadow on yellow band; note non-standard small serial on rudder



PROFILES 1:48 Scale

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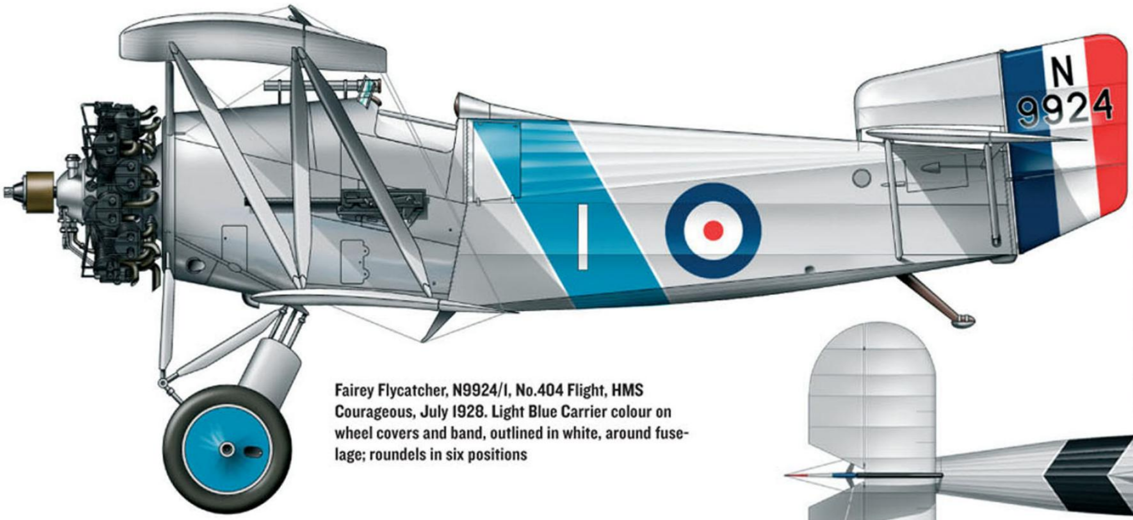
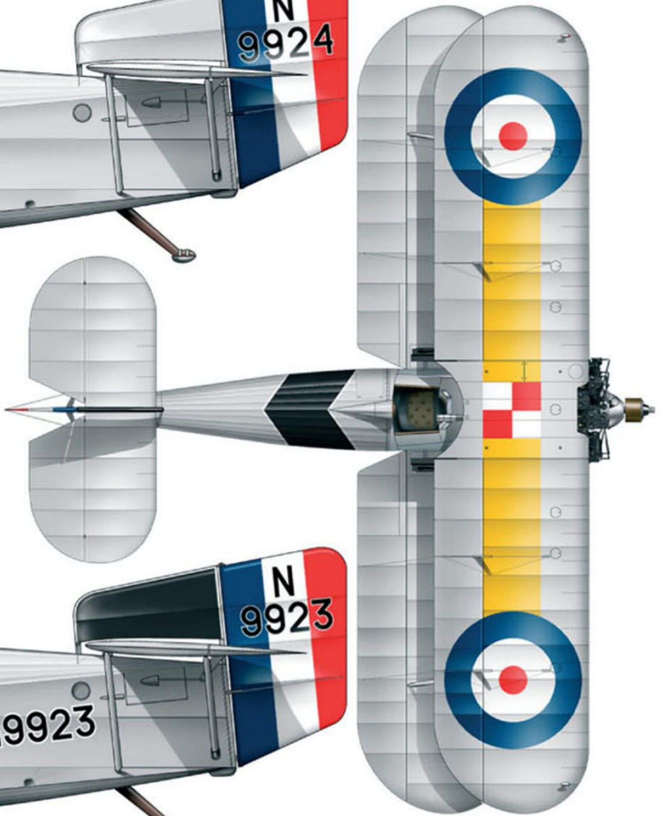
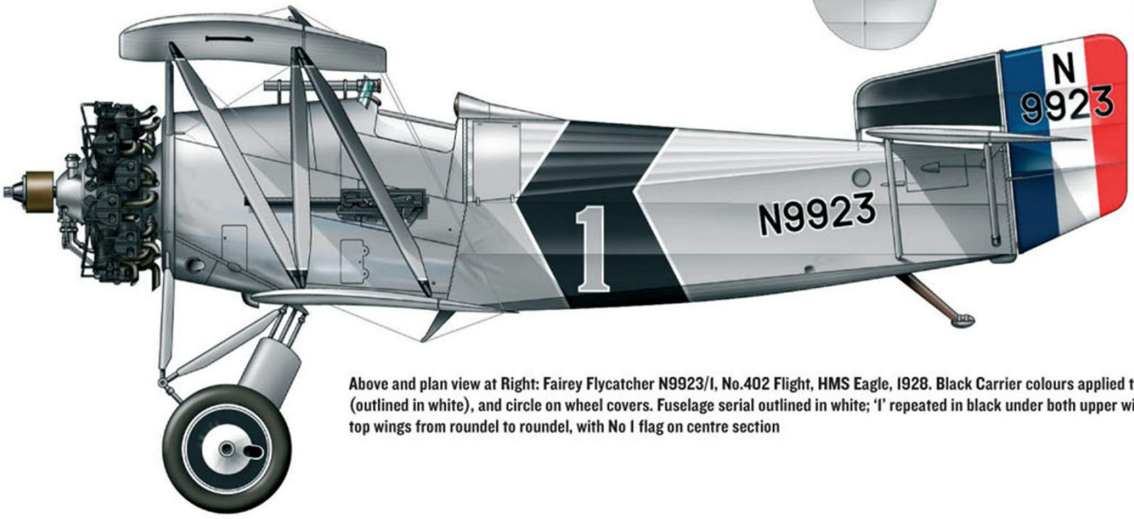
Fairey Flycatcher (Floatplane), N9892/5, No.403 Flight, HMS Hermes, 1926. White Carrier colour band with blue outline on fuselage sides with black '5'. Floats are white



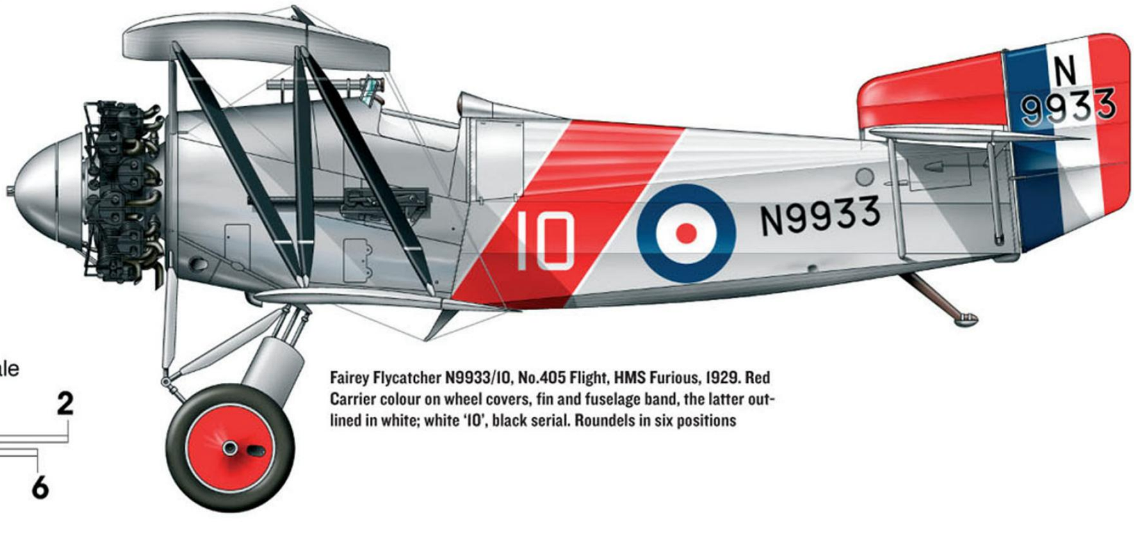
Fairey Flycatcher, N9924/1, No.404 Flight, HMS Courageous, July 1928. Light Blue Carrier colour on wheel covers and band, outlined in white, around fuselage; roundels in six positions



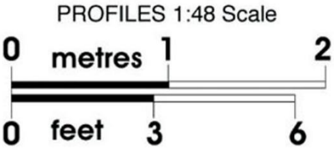


Above and plan view at Right: Fairey Flycatcher N9923/1, No.402 Flight, HMS Eagle, 1928. Black Carrier colours applied to fuselage band and fin (outlined in white), and circle on wheel covers. Fuselage serial outlined in white; '1' repeated in black under both upper wings; Yellow band above top wings from roundel to roundel, with No 1 flag on centre section

Fairey Flycatcher S1274/3, No.401 Flight, HMS Argus, 1929. Green Carrier colour fuselage band and wheel covers; wing and undercarriage struts, and wheel leg cover in black. Note fuselage serial has narrow white outline



Fairey Flycatcher N9933/10, No.405 Flight, HMS Furious, 1929. Red Carrier colour on wheel covers, fin and fuselage band, the latter outlined in white; white '10', black serial. Roundels in six positions



Fairey Flycatcher N9928, No.403 Flight, HMS Hermes, 1929. Medium Green patches on rear fuselage decking and red motif on wheel covers

Fairey Flycatcher, N9960/6, No.403 Flight, HMS Hermes, 1931. White band with blue outline on fuselage; blue/white chequered fin, and blue white interplane struts. Blue '6' and wheel covers

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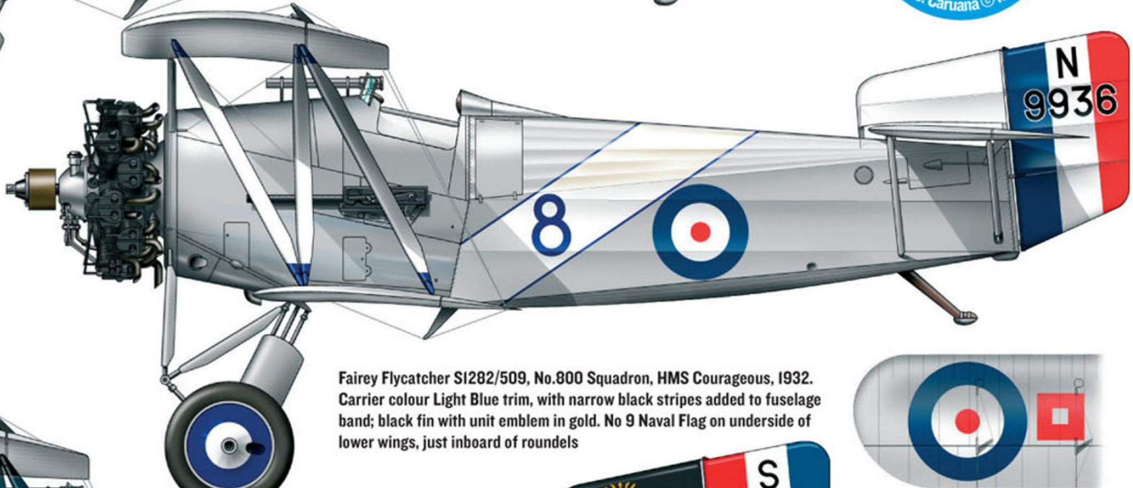
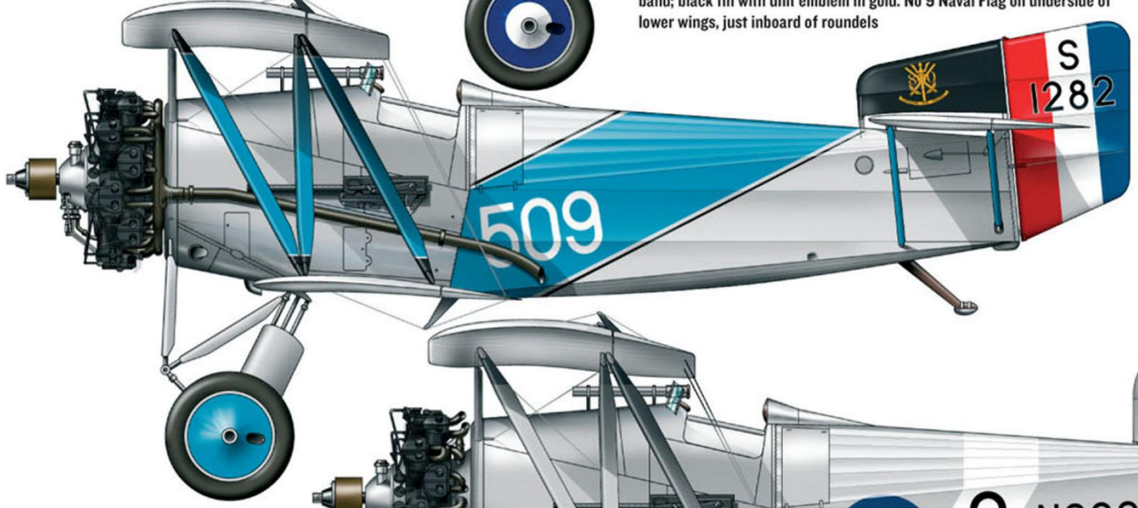
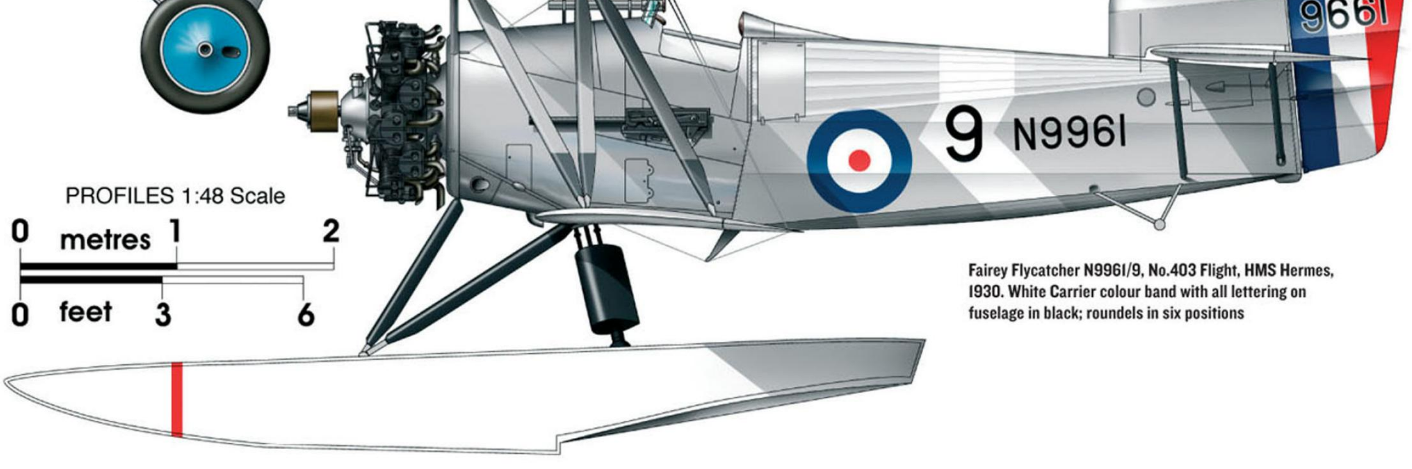


Fairey Flycatcher N9936/8, No.403 Flight, HMS Hermes, 1930. White Carrier colour on fin; white band with blue edges on fuselage. Struts and wheel covers are white and blue

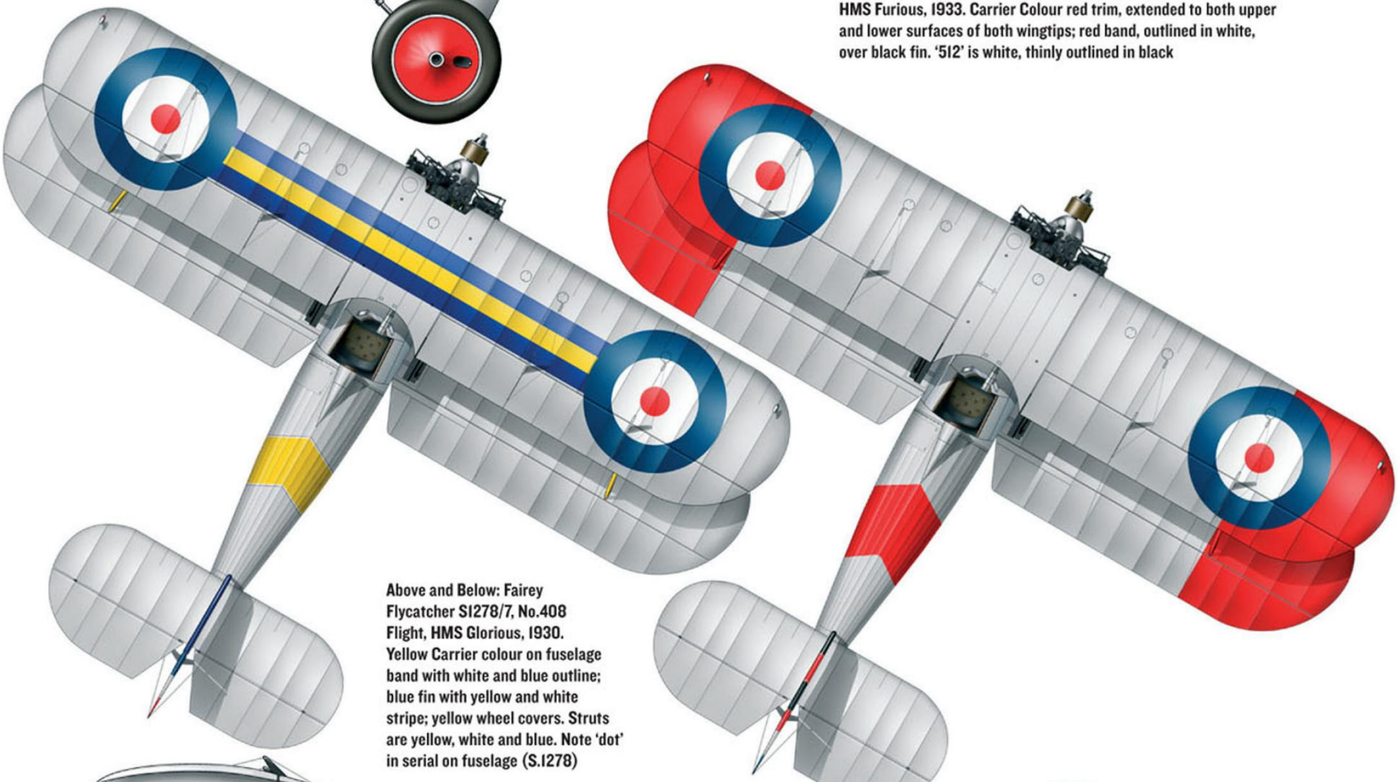
Fairey Flycatcher S1282/509, No.800 Squadron, HMS Courageous, 1932. Carrier colour Light Blue trim, with narrow black stripes added to fuselage band; black fin with unit emblem in gold. No 9 Naval Flag on underside of lower wings, just inboard of roundels



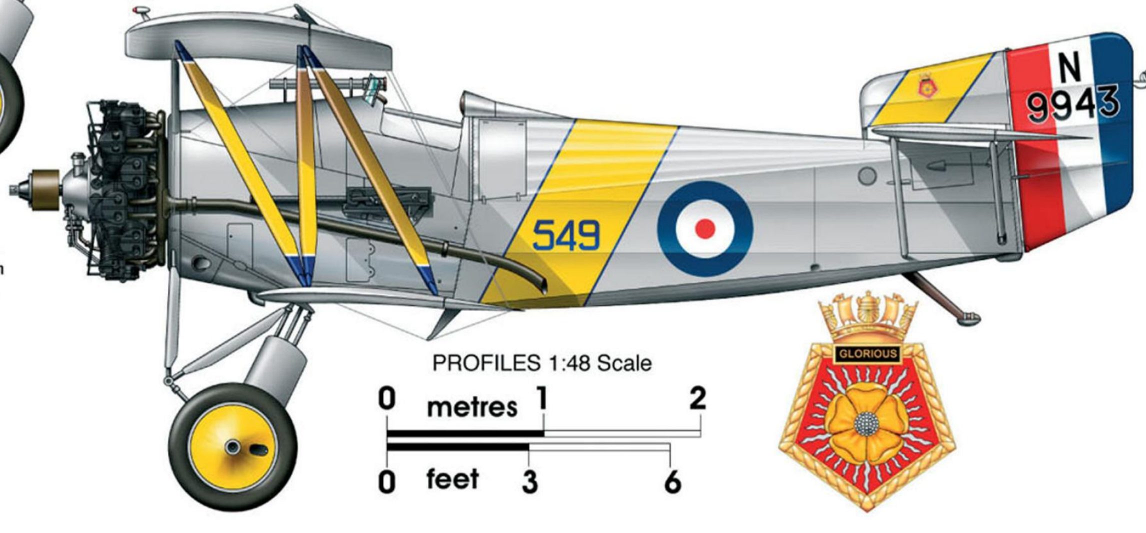


Fairey Flycatcher N9961/9, No.403 Flight, HMS Hermes, 1930. White Carrier colour band with all lettering on fuselage in black; roundels in six positions

Above and Below: Fairey Flycatcher N9928/512, No.801 Squadron, HMS Furious, 1933. Carrier Colour red trim, extended to both upper and lower surfaces of both wingtips; red band, outlined in white, over black fin. '512' is white, thinly outlined in black



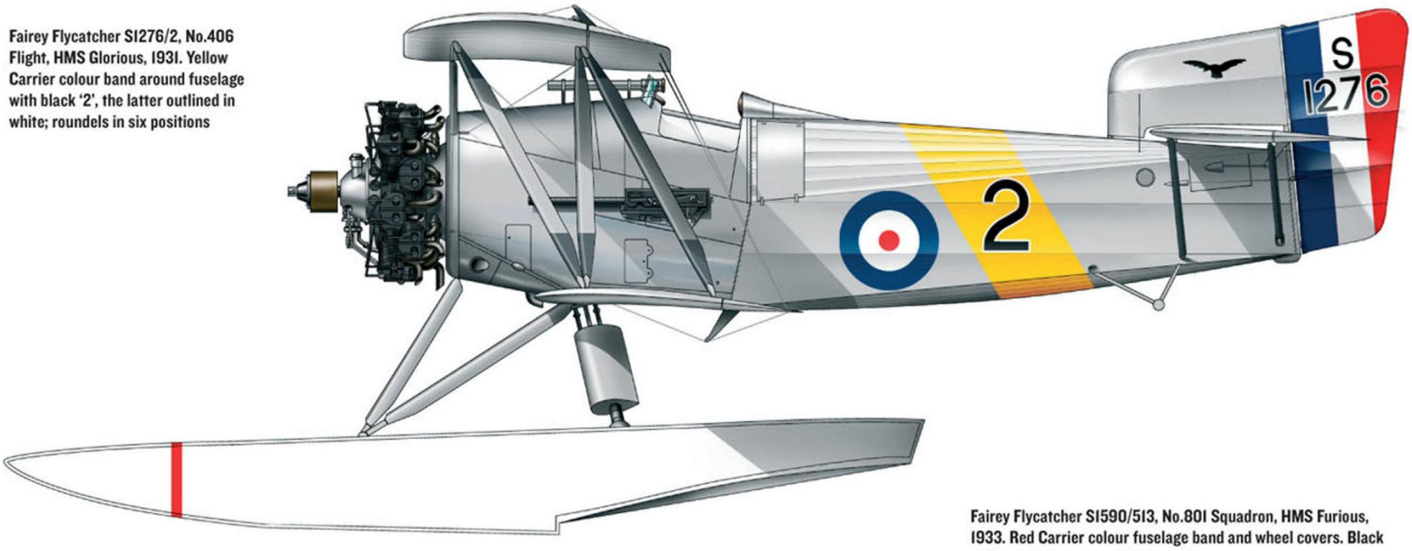
Above and Below: Fairey Flycatcher S1278/7, No.408 Flight, HMS Glorious, 1930. Yellow Carrier colour on fuselage band with white and blue outline; blue fin with yellow and white stripe; yellow wheel covers. Struts are yellow, white and blue. Note 'dot' in serial on fuselage (S.1278)



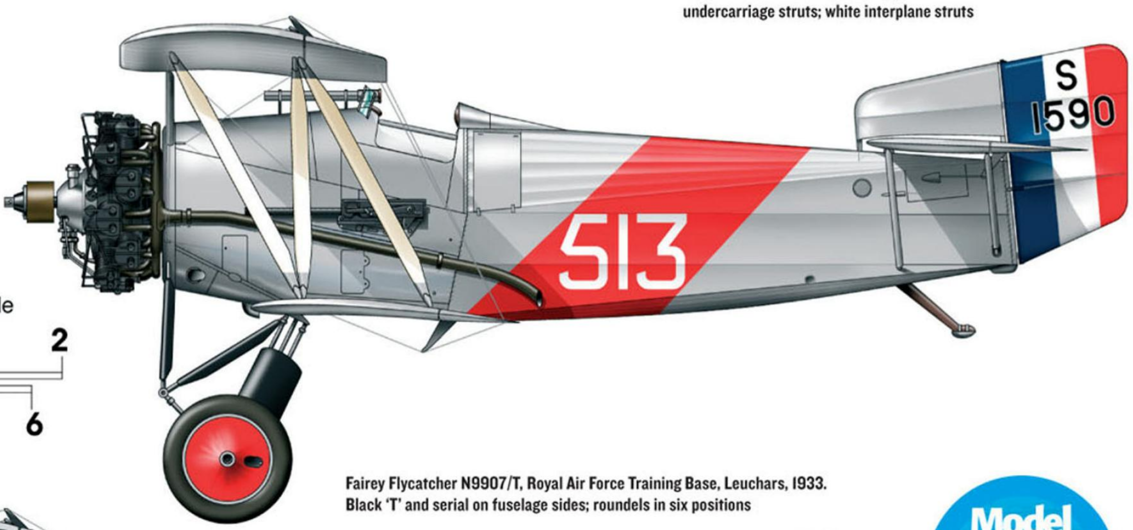
Fairey Flycatcher N9943/549, No.405 Flight, HMS Glorious, 1932. Yellow and blue trim on fuselage, fin and interplane struts; yellow wheel centres. Ship's badge carried on yellow fin segment

PROFILES 1:48 Scale

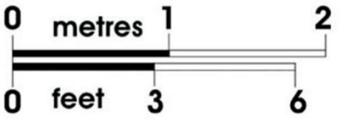
Fairey Flycatcher S1276/2, No.406 Flight, HMS Glorious, 1931. Yellow Carrier colour band around fuselage with black '2', the latter outlined in white; roundels in six positions



Fairey Flycatcher S1590/513, No.801 Squadron, HMS Furious, 1933. Red Carrier colour fuselage band and wheel covers. Black undercarriage struts; white interplane struts



PROFILES 1:48 Scale



Fairey Flycatcher N9907/T, Royal Air Force Training Base, Leuchars, 1933. Black 'T' and serial on fuselage sides; roundels in six positions

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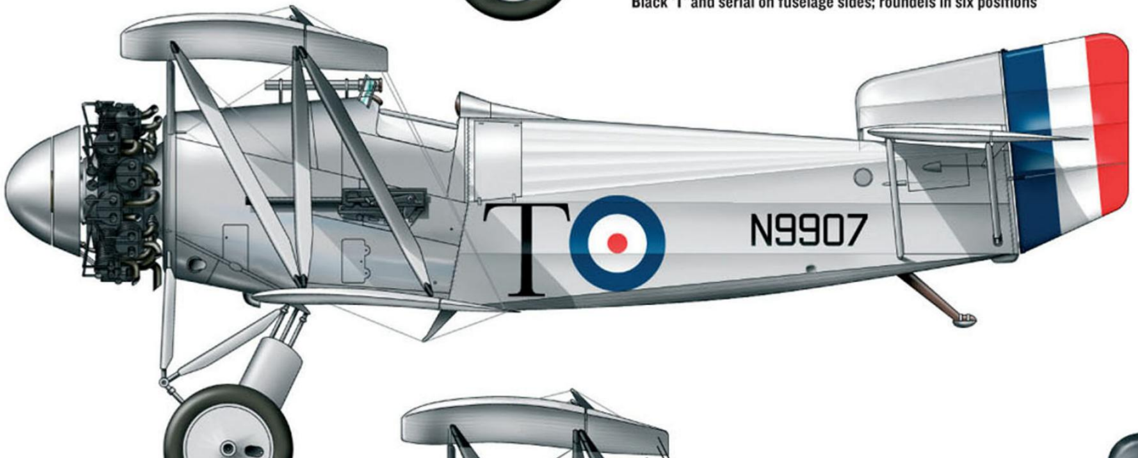
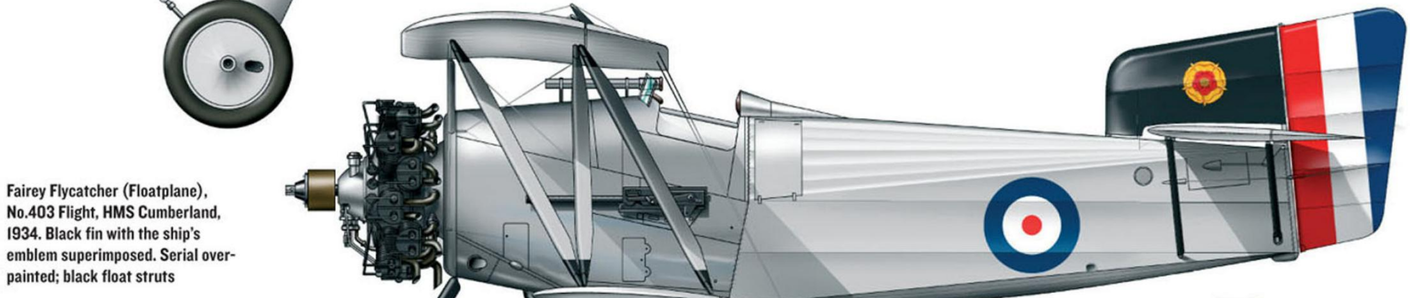


Fairey Flycatcher (Floatplane), No.403 Flight, HMS Cumberland, 1934. Black fin with the ship's emblem superimposed. Serial over-painted; black float struts



Macchi C.200 Saetta, 79-10, 79^ Squadriglia, 6º Gruppo, 1º Stormo CT, Fontanarossa (Catania, Sicily), August 1940. Verde Mimetico uppersurfaces with mottle in Giallo and Marrone Mimetico; Aluminio (silver paint) undersides. Codes in black and red; markings above wing in black over a white background, reversed for the undersides

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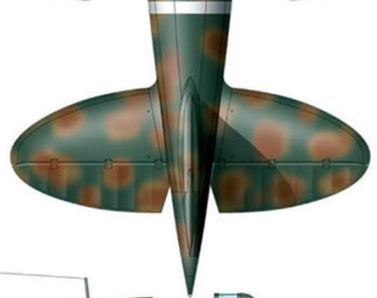
Macchi C.200 Saetta, 372-6, 372^ Squadriglia, 153º Gruppo Autonomo, Brindisi, April 1941. Giallo Mimetico/Verde Mimetico/Marrone Mimetico upper surfaces with Grigio Mimetico undersides; codes in black and red. 'Reversed' fasces markings below wings

Macchi C.200 Saetta, MM.5294/84-3, 84^ Squadriglia, 10º Gruppo, 4º Stormo CT, Sicily, 1941. Verde Mimetico with Giallo and Marrone Mimetico 'poached egg' mottling on upper surfaces; Grigio Mimetico undersides. White rear fuselage band and cross on vertical tail surfaces; codes in black and red. Unit badge on fuselage band. Personal marking of a white star in outline below cockpit, both sides

Macchi C.200 Saetta, 363-2, 363^ Squadriglia, 150º Gruppo Autonomo, Martuba, spring 1942. Nocciola Chiaro and Verde Oliva Scuro upper surfaces with Grigio Azzurro Chiaro undersides. Codes in black and red; unit badge ahead of fuselage band

Macchi C.200 Saetta, MM.7688, 384-7, flown by Sergente Zani, 384^ Squadriglia, 157º Gruppo, 53º Stormo CT, Castelvetrano (Sicily), May 1943. Nocciola Chiaro with Verde Oliva Scuro upper surfaces and Grigio Azzurro Chiaro undersides; white codes, fuselage band and cross on vertical tail surfaces. Serial in light blue

Macchi C.200 Saetta, 362-1, 362^ Squadriglia, 21º Gruppo Autonomo, Krivoj-Rog (Russia), summer 1941. Verde Mimetico upper surfaces with Giallo and Marrone Mimetico mottling; Grigio Mimetico undersides. Giallo Cromo engine cowling, fuselage band and below outer sections of wings; white triangles above and below wings. Code in black and white; unit badge on forward fuselage. Black outline markings above wings; white markings on a black background below wings



Above & Below: Macchi C.200 Saetta, 369-1 flown by Maggiore Borzoni of the 369^ Squadriglia, 22º Gruppo Autonomo CT, Stalino (Russia), September 1941. Verde Mimetico with Giallo and Marrone Mimetico 'poached egg' mottling on upper surfaces; Grigio Mimetico undersides. Giallo Cromo cowling, undersides of wing tips and rear fuselage band, with a narrow white band aft of the latter; codes in black and red. Unit badge, over a red patch, below windscreen (both sides). White triangles applied above and below wings at the leading edges

Macchi C.200 Saetta, 153-3, 153^ Squadriglia, 3º Gruppo Autonomo, Chinisia, spring 1943. Verde Oliva Scuro upper surfaces with Grigio Azzurro Chiaro undersides; code on white fuselage band in black and red. Unit badge aft of white band

THE DE HAVILLAND SEA VENOM

Sea Venom FAW.21 WW196, 444-O from No.891 Naval Air Squadron FAA photographed during a visit to HMS Falcon, Hal-Far, Malta. Although carrying the 'O' code on the fin this unit's aircraft where being deployed from HMS Bulwark at the time this photograph was taken in July 1955 (Richard J. Caruana)

During the remaining years of the 1940s following the end of World War II, the Fleet Air Arm (FAA) soldiered on for a good number of years with the Supermarine Seafire and the final piston-engined day fighter to see naval service, the Hawker Sea Fury. While the Royal Air Force (RAF) had been operating jet-powered fighter aircraft since the summer of 1944, the FAA had to wait until the turn of the decade when the Supermarine Attacker made its operational debut in 1951. Even then, the type saw limited frontline service; moreover it displayed nothing in its design that could have come from contemporary aeronautical development with its tail-wheel and unswept wings. Hardly any noticeable improvement in performance was achieved with the introduction of the Hawker Sea Hawk into FAA service, the type also being the last of the Royal Navy's day fighters.

Sea Venoms stacked close together on the bows of HMS Victorious whilst the carrier was visiting Grand Harbour, Malta. The unusual angle provides a good view of the 'V' frame arrestor hook (Richard J. Caruana)

To fulfil the FAA's needs for an all-weather fighter, De Havilland produced the Sea Hornet, a navalised version of its RAF stable-mate, powered by a pair of 2,030hp Merlin engines. In the De Havilland Sea Vixen the Royal Navy expected to acquire a jet-powered all-weather fighter designed for its specific requirements; however the pressing need to obtain a replacement for the Sea Hornet had already been felt as soon as the type had entered service in 1951. In February of that year the FAA evaluated Venom NF.3 bearing the temporary civil registration of G-5-3 and results were encouraging enough to proceed with the issue of Specification N.107 to De Havilland requesting a navalised version to fulfil the duties of all-weather interception until the arrival of the Sea Vixen.

As it turned out, the Sea Venom was externally very similar to the NF.3 version, including the reversed tail boom bullet fairings similar to those of the single-seat Venom rather than those at the tailplane root, as for the Venom NF.2. Navalisation included the introduction of a wing fold at around half span, catapult pick-up hooks, a strengthened long-stroke undercarriage and a 'V' frame arrestor hook that folded up into a fairing above the engine exhaust pipe. A Ghost 103 turbojet, providing 4,850lb of thrust, was the source of power while the side-by-side seating of the two-man crew consisted of a pilot sitting on the port side and an observer seated some five inches further aft on the starboard side.

The first prototype, WK376, flew for the first time on 19 April 1951 at Hatfield where it had been built together with the second prototype WK379. A third Sea Venom was built at Christchurch; all three bore the designation of De Havilland Sea Venom NF.20. Following 'deck landing' trials at Boscombe Down, while real deck trials were performed on HMS Illustrious during July. Before a second round of deck trials aboard HMS Eagle between May and June 1952, a number of modifications that had been recommended after the trials of the previous summer. Nearly 50 take-offs and landings had been successfully performed, where WK376's characteristics became much appreciated, although the lack of an ejector seat was a cause for concern for naval crews.

An initial contract covering 50 aircraft was issued (WM500-523; WM542-567), still bearing the designation of Sea Venom NF.20, but this was later changed to FAW.20 (Fighter All Weather), with the first example (WM500) taking to the air at Christchurch for the first time on 27 March 1953 and the first nine Sea Venoms were delivered to No.890 Naval Air Squadron (NAS) at Yeovilton where it had been reformed at around the same time. During its work up period the Sea Venom's real problems came to light, especially those concerning undercarriage and arrestor hook weaknesses. These were quickly seen to and by May 1955 No.890 NAS could undertake further deck landings aboard HMS Bulwark before proceeding onto HMS Albion for its first tour. Although at first it appeared that problems had been solved, more arrestor hook failures took place. Although Nos.808 and 809 NAS had started to work up on the Sea Venom, the type was withdrawn from carrier service and relegated to training duties.

Working on the experience gained on the FAW.20, De Havilland produced an improved version under the designation of FAW.21, which apart from navalisation incorporated nearly all the features of the RAF's Venom NF.3, including the uprated Ghost 104 turbojet engine that provided 4,950lb thrust. Other refinements included a stronger undercarriage, strengthened arrestor hook, power-assisted ailerons and – most important of all – Martin-Baker Mk 4a ejection seats. As the pilot, sitting on the starboard side, could now also opt to

raise the height of his seat, the canopy above his head now featured a bulge in its transparent area. The observer's seat had to be moved forward so that it could clear the canopy's frame during ejection, leading to the redistribution of a number of instruments in that area of the cockpit. An APS-57 (AI Mk 21) radar was fitted in the nose section, while the small extensions of the tailplane outside the tail booms were eliminated.

First production Sea Venom FAW.21 (WM568) performed its maiden flight on 22 April 1954. First unit to convert to the new version was No.809 NAS in May 1955 followed by Nos.891, 890, 892, 893, 894, 736, 738, 766, and 767. Four FAW.21s were assigned to the 'Blue Jay' (later 'Firestreak') development programme and delivered to No.700 NAS at Ford in 1957. The unit boarded HMS Victorious in December and after its working-up period embarked on a programme of live firing, using No.728 NAS Fireflies from Hal Far (Malta) as targets, providing invaluable information for the weapon's later use on the Sea Vixen.

Quite a number of FAW.21s were used for experimental work, among which were seven Sea Venoms that had been modified to electronic countermeasure work, with specialised equipment for this purpose replacing the four cannon in the aircraft's belly. Known as Sea Venom ECM.21s, they were operated by No.831 NAS from the unit's shore base at RAF Watton starting from 1963.

Production of the FAW.21 totalled 167 examples, a number of which had been fitted with the American Westinghouse AI.21 radar and, therefore, required a modified nose profile. Externally the FAW.22 was practically identical to its predecessor for the main modification was the installation of a Ghost 105 turbojet that provided 5,300lb thrust. 39 examples of this version were built, eventually to see service with Nos.891, 893 and 894 NAS. No.831 NAS also operated a number of examples converted for electronic countermeasure work, known as ECM.22s.

First real test for the Sea Venom came with the crisis that erupted around Nasser's nationalisation of the Suez Canal on 26 July 1956. No.890 NAS aboard HMS Albion and Nos.892 and 893 NAS aboard HMS Eagle sailed from Malta on 26 October and were on station some 50 miles off the Egyptian coast, north of Cairo, five days later, when the real action – Operation Musketeer – began. Sea Venoms from these carriers supported Sea Hawks attacking airfields at Dekheila, Bilbeis, Abu Sueir, Inchas, Almaza and Cairo West. During the first day alone, naval aircraft had flown some 500 sorties. The naval air component was also called to provide cover for the ground assault on the morning of 5 November when 750 British and French paratroopers were dropped on Gamil airfield, west of Port Said. Following the invasion and attainment of all objectives the British and French forces declared a cease-fire at midnight of 6 November. Notwithstanding the success of the operation, United Nations' pressure brought about a withdrawal from the area whilst taking over control over the Suez Canal for many years later.

With their return home, No.890 NAS was disbanded while No.809 NAS was called once again into action in 1958 during the Cyprus Emergency when it flew a number of sorties with its Sea Venoms against EOKA terrorists flying from HMS Albion. During the following year No.809's cruise took the unit as far as Australia and New Zealand. Before returning to Singapore, No.809 also participated in cross-operations carried out with USS Yorktown. HMS Albion sailed back via Madagascar, South Africa and South America before reaching the UK, when No.809 NAS was disbanded on 17 August 1959.

A Sea Venom unit aerobatic team from No.891 NAS was formed flying FAW.22s under the leadership of Lt Cdr P.G. Young. The team flew a number of displays during 1959 before it embarked on HMS Centaur for the Far East in June. On the return trip, via Aden, the unit took part in Operation Damen, carrying out rocket attacks against Yemeni rebels. Back in the UK, the unit continued to operate from Yeovilton until its disbandment on 27 July 1961 when official FAA Sea Venom operations came to an end.

The only country to operate the Sea Venom, as built by De Havilland, was Australia under the designation of Mk 53. First unit to form on the Sea Venom was No.808 Squadron, Royal Australian Navy (RAN) at Culdrose together Fairey Gannets of Nos.816 and 816 Squadron RAN and two Sycamores, thus forming the initial naval component for HMAS Melbourne (ex HMS Majestic). The FAW.53 different from a standard FAW.21 in having AI.17 radar installed. Following crew training flying FAA FAW.20s at Yeovilton, No.808 Squadron RAN flew onto HMAS Melbourne whilst it was sailing in the English Channel in March 1956. A second unit, No.805 Squadron RAN, was formed in Australia in summer 1958. No.805 gave up its Sea Venoms in June 1962 as No.816 Squadron RAN took over the type the following year that it continued to fly until final retirement on 25 August 1967. The only other RAN unit to operate the Sea Venom was No.724 in the training role.

The story of the French licence-built version began with the need by France to provide its aircraft carriers *Foch* and *Clemenceau* with jet fighters once the Service Technique Aeronautique of June 1946 had failed to produce an indigenous design. In January 1951 the Ministere de la Marine selected the Sea Venom FAW.20 for this purpose, acquiring a licence for its manufacture by SNCASE (later to become *Sud-Aviation*). Four such examples were delivered by DeHavilland in kit form to SNCASE. The first of the SNCASE-built machines, designated *Aquilon* 20, flew for the first time on 31 October 1952. It was followed by another pre-series aircraft and a further 25 production aircraft built from subassemblies supplied by Airspeed. It had originally been planned to fit these aircraft with the Thomson AI radar but as these never materialised the Aquilon had to be begin its career as a day fighter. The first batch was redesignated *Aquilon* 201 while a second batch of 25 examples completely built in France were delivered as *Aquilon* 202.

With the acquisition of the Westinghouse APQ 65 AI radar it was possible to proceed with production with minimal modifications to the nose area. Fitting of this radar however did require the elimination of the starboard ejector seat and some modifications to the cockpit area. However all versions of the *Aquilon* retained the early FAW.20 style extended tailplane. This became the *Aquilon* 203 single-seater of which 40 examples were built. This version could be equipped to fire the Nord 5103/AA.20 radio-guided AAM and later the R.511 semi-active radar homing AAM and AS-20 ASM. Finally six radar trainers devoid of weapons were produced as the *Aquilon* 204, the last of which performed its maiden flight early in 1958. *Aeronavalé* operational units equipped with the *Aquilon* consisted of *Flotilles* 11 and 16 and later served in the training role until the type was retired from service in 1965.

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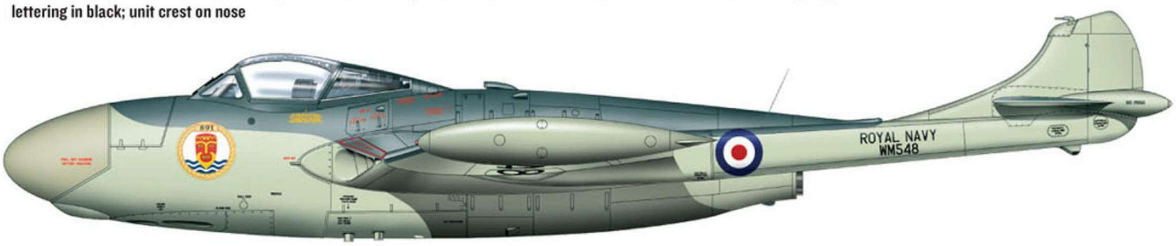
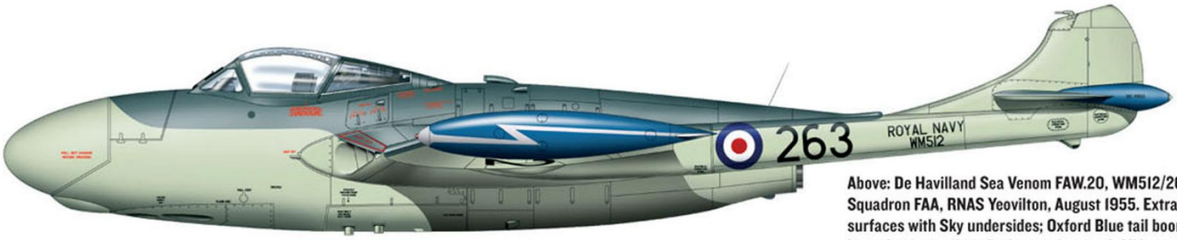
Sea Venom FAW.22 XG729/593 basking in the sun at Hal-Far, Malta. The base known as HMS Falcon was one of the first visited by the author during an open day handling a camera! 5 May 1956 (Richard J. Caruana)

Sea Venom FAW.22 XG612 poses for the camera ship and displays details of its underside; note the presentation and positon of the serials below the wings (De Havilland)

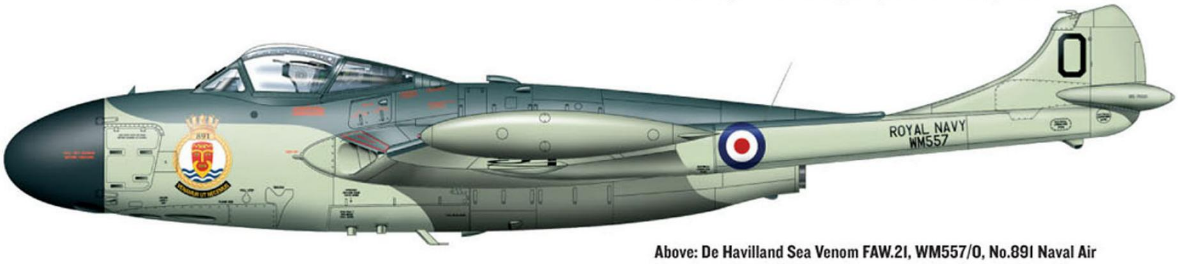
De Havilland Sea Venom FAW.20, WM516, 205, No.890 Naval Air Squadron FAA, RNAS Yeovilton, summer 1954. Extra Dark Sea Grey upper surfaces with Sky undersides; all lettering in black, unit crest below windscreen

De Havilland Sea Venom FAW.20, WM548, No.891 Naval Air Squadron FAA, RNAS Yeovilton, late 1954. Extra Dark Sea Grey/Sky finish with all lettering in black; unit crest on nose

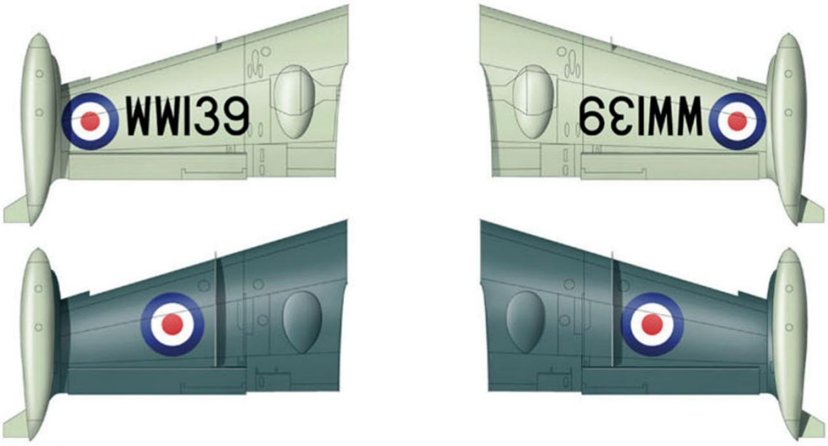




Above: De Havilland Sea Venom FAW.20, WM512/263, No.808 Naval Air Squadron FAA, RNAS Yeovilton, August 1955. Extra Dark Sea Grey upper surfaces with Sky undersides; Oxford Blue tail boom bullet and tip tanks, the latter having a white flash superimposed. All lettering in black



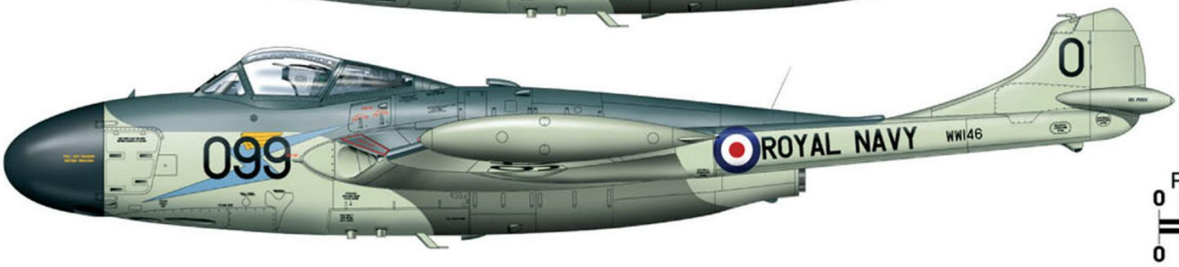
Above: De Havilland Sea Venom FAW.21, WM557/0, No.891 Naval Air Squadron FAA, HMS Ark Royal, summer 1955. Extra Dark Sea Grey upper surfaces with Sky undersides; all lettering and radome in black. Unit badge on nose, both sides

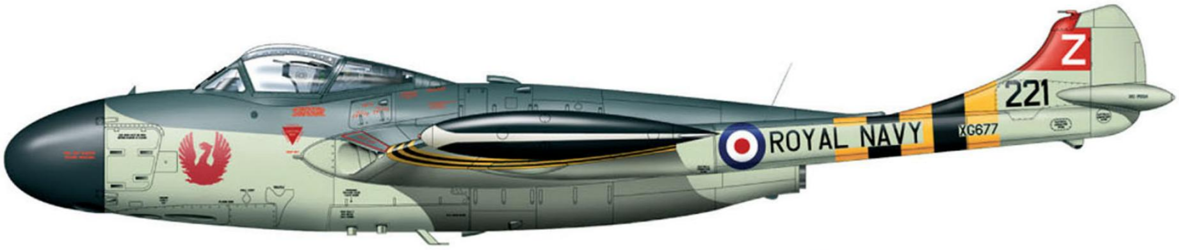


Left: typical style and position of markings above and below the wings of Fleet Air Arm Sea Venoms

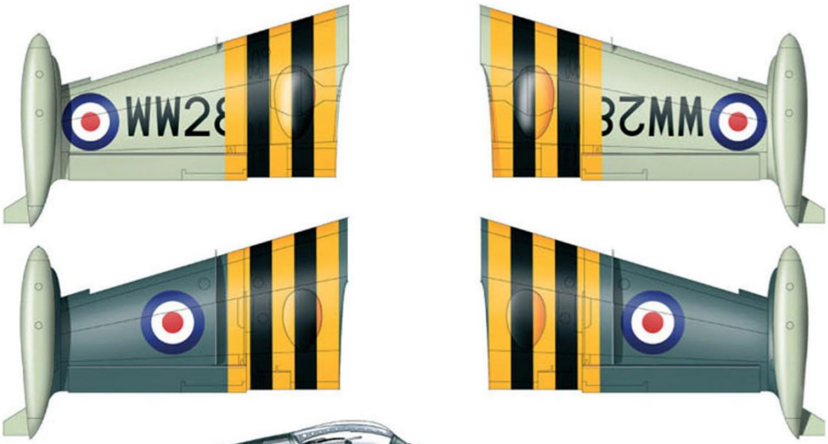
Below: De Havilland Sea Venom FAW.21, WW217/351-0, No.890 Naval Air Squadron, HMS Ark Royal, 1956. Extra Dark Sea Grey upper surfaces with Sky undersides; radome and all lettering in black. Yellow/Black checked wing tip tanks. Black tailboom bullets; unit badge in black on fuselage sides. Formed part of the only Sea Venom aerobatic team under the leadership of Lt Cdr P.G. Young

Bottom: De Havilland Sea Venom FAW.21, WW146/099, No.893 Naval Air Squadron FAA, HMS Eagle, 1956. Extra Dark Sea Grey upper surfaces with Sky undersides; all lettering and radome in black. Pale blue lightning flash and gold wing marking on fuselage sides with code '099' superimposed





Above: De Havilland Sea Venom FAW.21, XG677/221-Z, No.809 Naval Air Squadron FAA, HMS Albion, Suez, 1956. Extra Dark Sea Grey upper surfaces with Sky undersides; Yellow/Black bands around rear of tail booms and chord-wise around wings (. Black radome, RN script, serial and code. Ship's code 'Z' in white on red fin; red 'Phoenix' on nose. Black wing tip tanks with white flash



Below: De Havilland Sea Venom FAW.21, WW280/095, No.893 Naval Air Squadron FAA, HMS Eagle, Suez, 1956. Extra Dark Sea Grey upper surfaces with Sky undersides; Yellow/Black bands around rear of tail booms and chord-wise around wings. All lettering and radome in black. Pale blue lightning flash and gold wing marking on fuselage sides with code '095' superimposed

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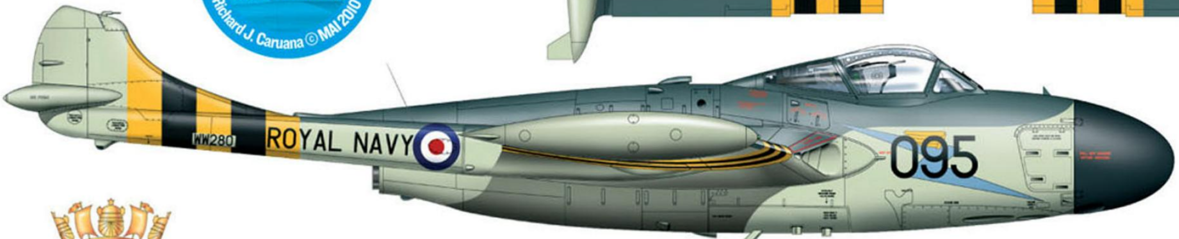
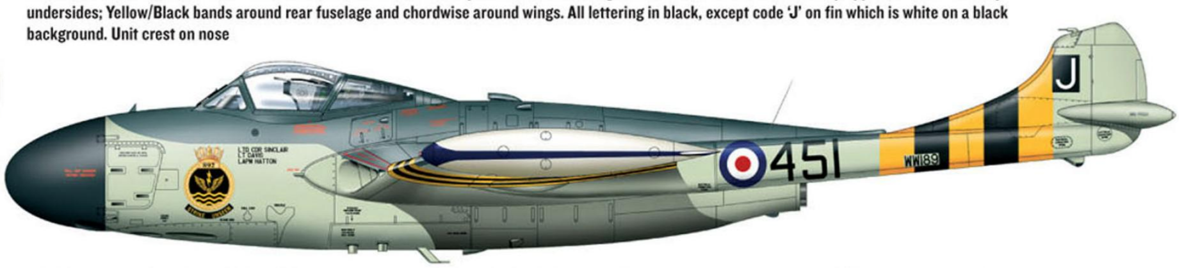
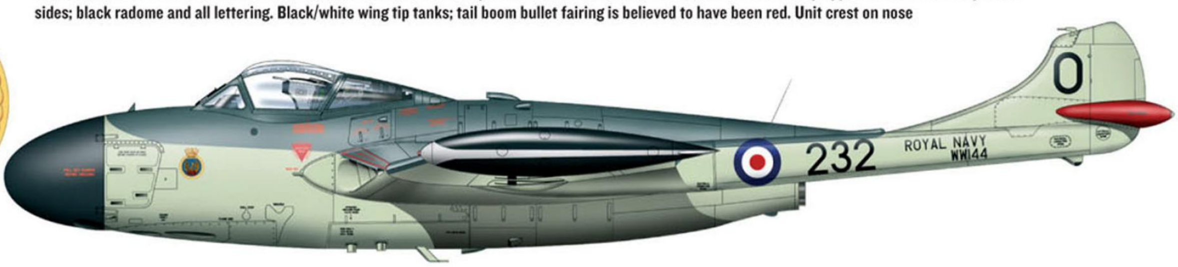


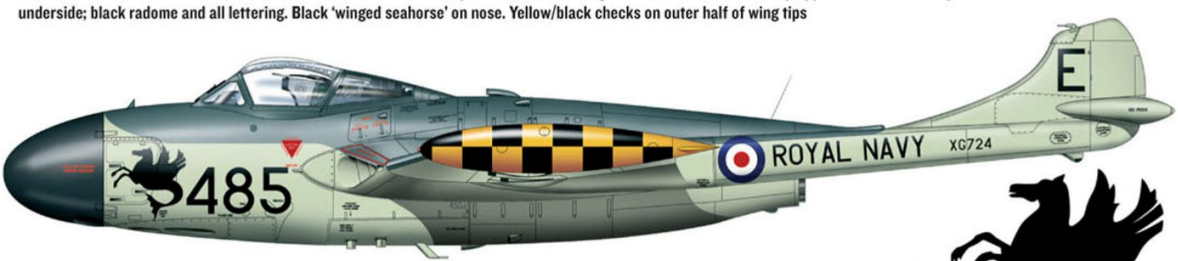
De Havilland Sea Venom FAW.21, WW189/451-J, No.892 Naval Air Squadron FAA, HMS Eagle, Suez, 1956. Extra Dark Sea Grey upper surfaces with Sky undersides; Yellow/Black bands around rear fuselage and chordwise around wings. All lettering in black, except code 'J' on fin which is white on a black background. Unit crest on nose

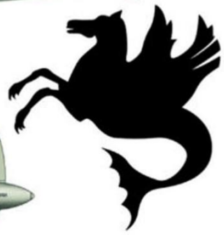


De Havilland Sea Venom FAW.21, WW144/232-O, No.809 Naval Air Squadron FAA, HMS Ocean, 1956. Extra Dark Sea Grey upper surfaces with Sky under-sides; black radome and all lettering. Black/white wing tip tanks; tail boom bullet fairing is believed to have been red. Unit crest on nose

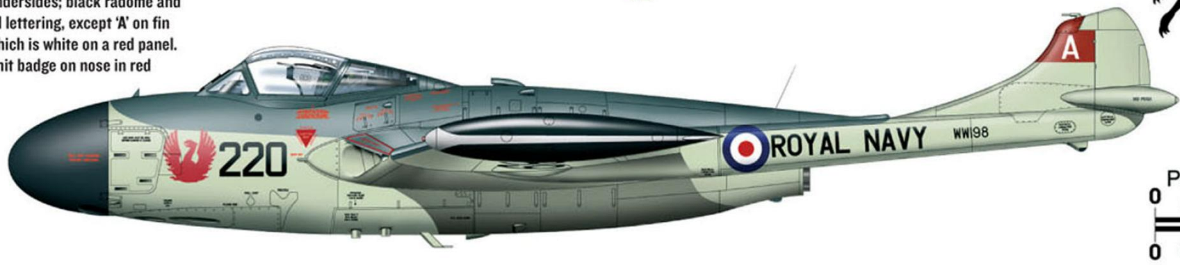


De Havilland Sea Venom FAW.22, XG724/485-E, No.894 Naval Air Squadron FAA, HMS Eagle, 1957. Extra Dark Sea Grey upper surfaces with Sky underside; black radome and all lettering. Black 'winged seahorse' on nose. Yellow/black checks on outer half of wing tips





Below: De Havilland Sea Venom FAW.21, WW198/220-A, No.809 Naval Air Squadron FAA, HMS Albion, 1958. Extra Dark Sea Grey upper surfaces with Sky undersides; black radome and all lettering, except 'A' on fin which is white on a red panel. Unit badge on nose in red



Profiles 1:72 Scale
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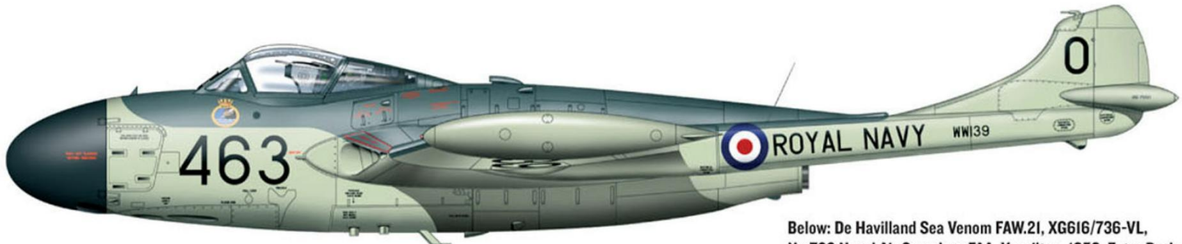
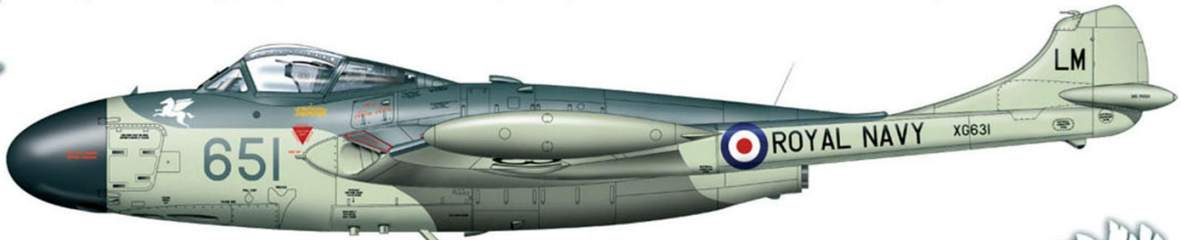


Above: De Havilland Sea Venom FAW.21, WW139/463-O, No.893 Naval Air Squadron FAA, HMS Ark Royal, during a cross-operating service on USS Saratoga, October 1957. Extra Dark Sea Grey upper surfaces with Sky undersides; black radome and all lettering. Unit crest below windscreen

Below: De Havilland Sea Venom FAW.21, XG616/736-VL, No.766 Naval Air Squadron FAA, Yeovilton, 1958. Extra Dark Sea Grey upper surfaces with Sky undersides; radome, all lettering and unit marking in black. Yellow/Black checks on wing tip tanks. '36' repeated in black on inner faces of fins

De Havilland Sea Venom FAW.21, XG737/438-B, No.891 Naval Air Squadron FAA, HMS Bulwark, 1958. Extra Dark Sea Grey upper surfaces and Sky undersides; all lettering and radome in black. Yellow/orange checked tip tanks; unit badge on fin

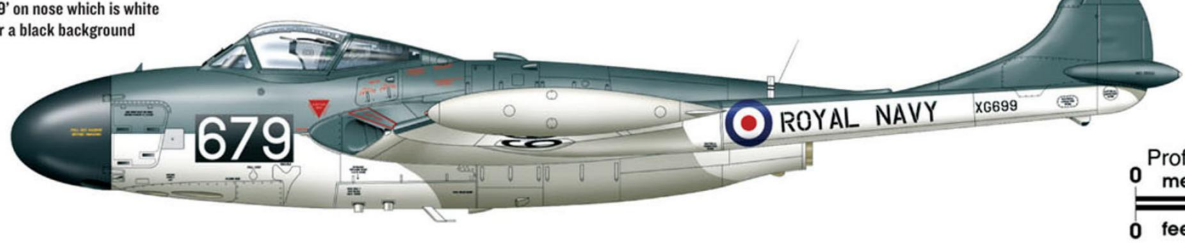
De Havilland Sea Venom FAW.21, XG631/651-LM, No.738 Naval Air Squadron FAA, RNAS Losseimouth, 1959. Extra Dark Sea Grey upper surfaces with Sky undersides. RN script, serial, code on fins and radome in black; white badge ahead of windscreen. Code '651' in Extra Dark Sea Grey



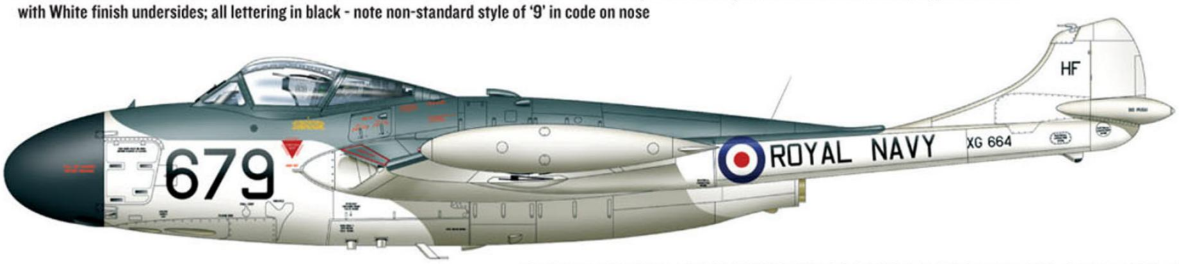
De Havilland Sea Venom FAW.22, XG723/490-A, No.894 Naval Air Squadron FAA, HMS Albion, 1959. Extra Dark Sea Grey upper surfaces with White undersides; black radome, black code '490' outlined in white. White 'A' on fin; black/white sharksmouth motif. Red/black checks on outer half of wingtip tanks winged seahorse marking at base of fin

De Havilland Sea Venom FAW.22, WW296/444, No.891 Naval Air Squadron FAA, summer 1961. Extra Dark Sea Grey upper surfaces with White undersides; radome and all lettering in black. 'Mask' emblem on nose, both sides

Below: De Havilland Sea Venom FAW.22, XG699/679, No.750 Naval Air Squadron FAA, Lossiemouth, 1967. Extra Dark Sea Grey upper surfaces with white undersides; radome and all lettering in black, except code '679' on nose which is white over a black background



De Havilland Sea Venom FAW.22, XG664/679-HF, No.728 Naval Air Squadron FAA, HMS Falcon (Hal-Far, Malta), 1961. Extra Dark Sea Grey upper surfaces with White finish undersides; all lettering in black - note non-standard style of '9' in code on nose



De Havilland Sea Venom ECM.22, WW221/381-CU, No.831 Naval Air Squadron FAA, Culdrose, 1963. Extra Dark Sea Grey upper surfaces with White undersides; black radome and all lettering, except code 'CU' on fin which is white. Red wing tip tanks and tail bullet fairing

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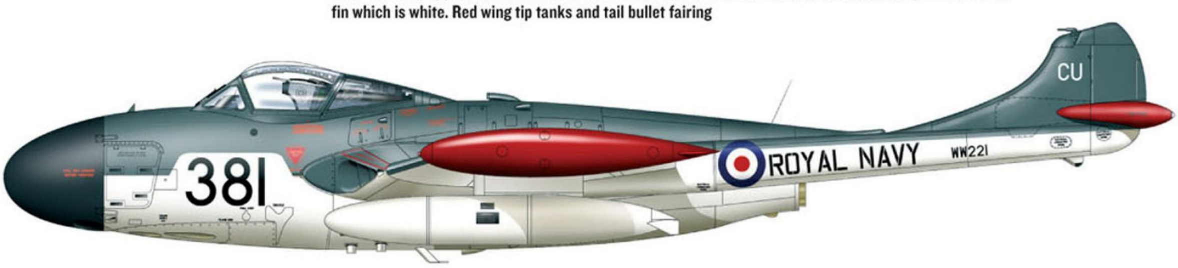
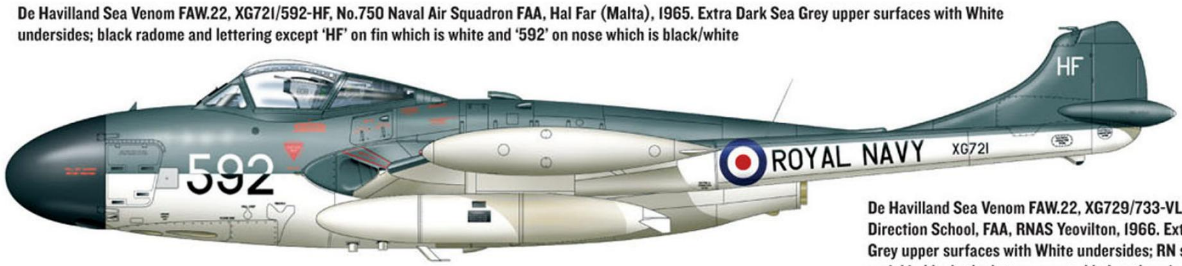
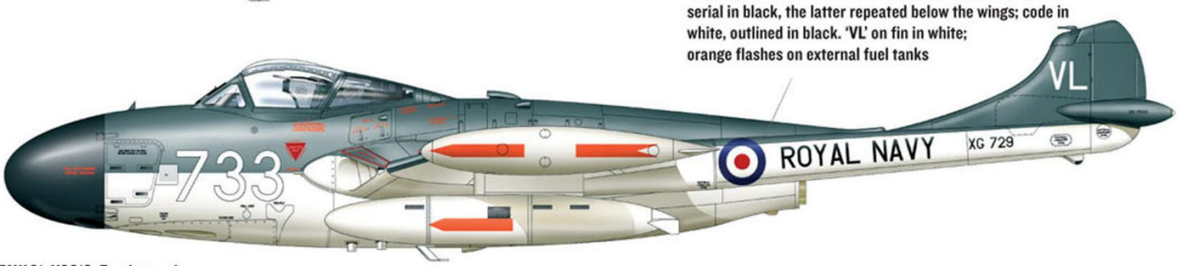


De Havilland Sea Venom FAW.22, XG721/592-HF, No.750 Naval Air Squadron FAA, Hal Far (Malta), 1965. Extra Dark Sea Grey upper surfaces with White undersides; black radome and lettering except 'HF' on fin which is white and '592' on nose which is black/white



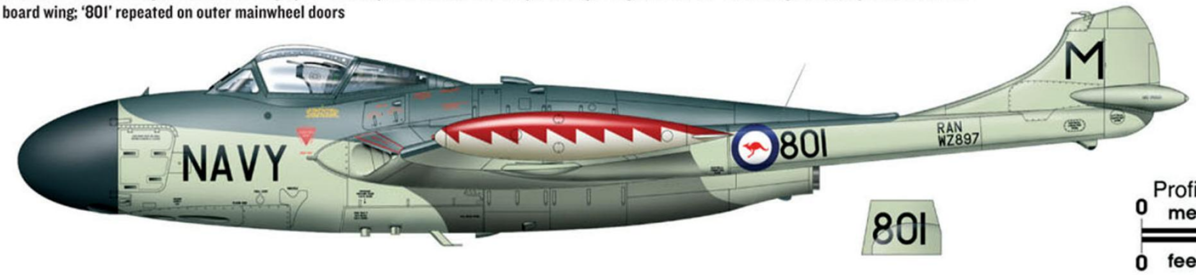
De Havilland Sea Venom FAW.22, XG729/733-VL, Airwork Air Direction School, FAA, RNAS Yeovilton, 1966. Extra Dark Sea Grey upper surfaces with White undersides; RN script and serial in black, the latter repeated below the wings; code in white, outlined in black. 'VL' on fin in white; orange flashes on external fuel tanks

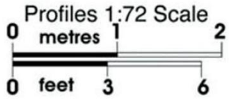


De Havilland Sea Venom FAW.21, XG613, Farnborough, 1963. Extra Dark Sea Grey upper surfaces with Sky undersides; black radome and all lettering. Dayglo Red bands along fuselage and tailbooms; black wing tip tanks with Dayglo Red front tips

De Havilland Sea Venom FAW.53, WZ904/868, No. 24 Squadron, Royal Australian Navy, early 1960s. Extra Dark Sea Grey upper surfaces with Sky undersides; black radome and all lettering. Yellow/Black stripes around wing tips. 'NAVY' on fuselage sides and below starboard wing; '868' repeated on outer mainwheel doors

De Havilland Sea Venom FAW.53, WZ897/801-M, No.805 Squadron Royal Australian Navy, HMAS Melbourne, 1964. Extra Dark Sea Grey/Sky finish with radome and all lettering in black; blue wing tip tanks with yellow front and rear tips, and lightning flash. 'NAVY' on fuselage sides, repeated below starboard wing; '801' repeated on outer mainwheel doors

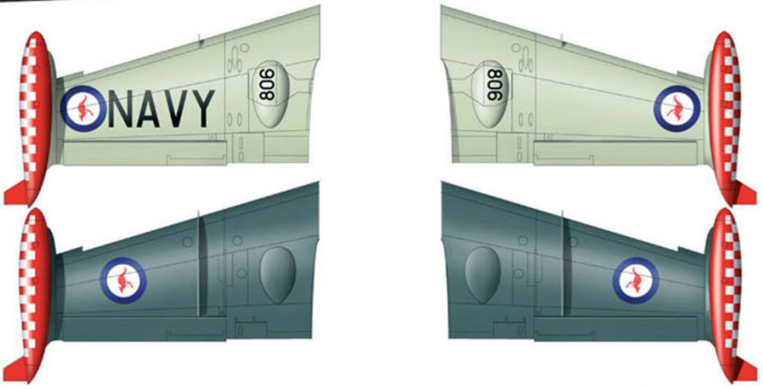




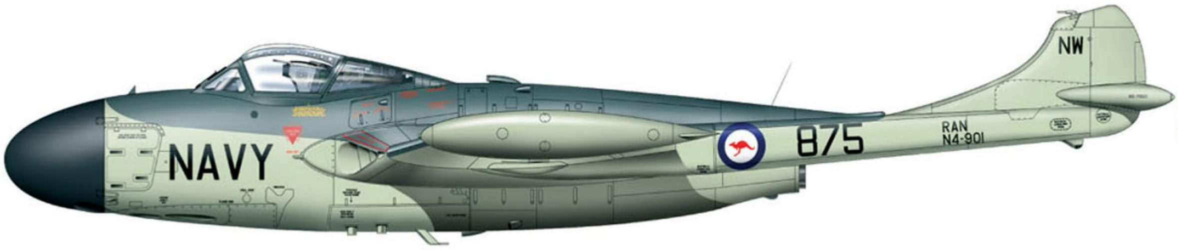
De Havilland Sea Venom FAW.53, WZ906/209-M, No. 724 Squadron Royal Australian Navy, HMAS Melbourne, 1964. Extra Dark Sea Grey upper surfaces with Sky undersides radome and all lettering in black. Blue wing tip tanks with yellow front and rear tips, and lightning flash. '209' repeated on outer mainwheel doors

Above: De Havilland Sea Venom FAW.53, WZ930/806-M, No.805 Squadron Royal Australian Navy, HMAS Melbourne, 1962. Extra Dark Sea Grey upper surfaces with Sky undersides; black radome and all lettering. Red/White checks on wing tip tanks. Black 'NAVY' on fuselage sides and below starboard wing; '806' repeated on outer mainwheel doors, '06' on nosewheel door in black

Right: Style and position of markings above and below the wings of Royal Australian Navy Sea Venoms



Below: De Havilland Sea Venom FAW.53, N4-901/875-NW (ex-WZ901), Royal Australian Navy, operated by the Nowara conversion unit, late 1960s. Extra Dark Sea Grey upper surfaces with Sky undersides; radome and all lettering in black



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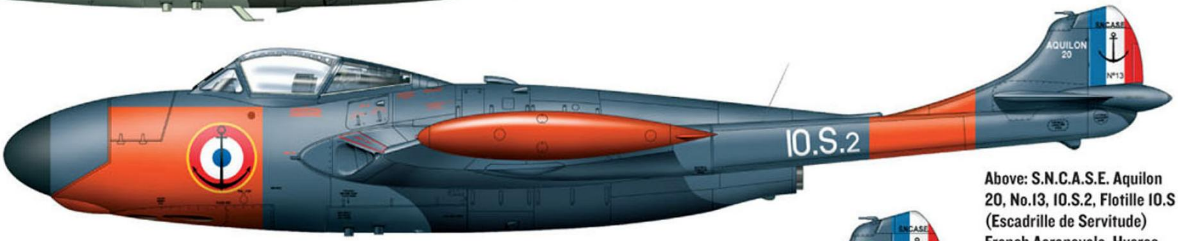
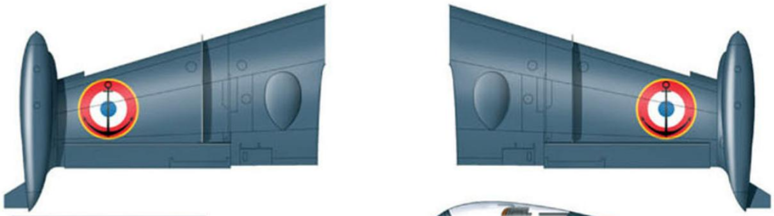
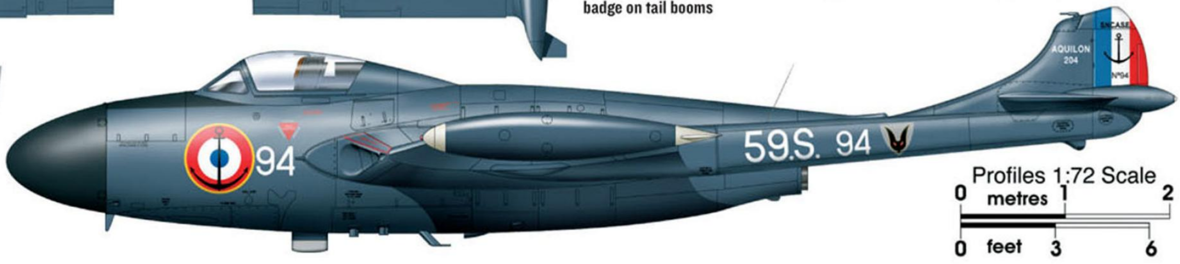


Above: S.N.C.A.S.E. Aquilon 20, No.13, 10.S.2, Flotille 10.S (Escadrille de Servitude) French Aeronavale, Hyeres, summer 1961. Bleu Marine Brillant (FS.25402) overall with Dayglo Red nose, tip tanks and bands around tail booms; black front of nose. Codes in white; national markings in six positions

S.N.C.A.S.E. Aquilon 203, No.76, Flottille 11 French Aeronavale. Bleu Marine Brillant (FS.25402) overall with black radome; codes in white. National markings in six positions; unit badge on fin



S.N.C.A.S.E. Aquilon 204, No. 94, 59.S.94, Flotille 59.S (Escadrille de Servitude) French Aeronavale, Hyeres, early 1962. Bleu Marine Brillant (FS.25402) overall with black radome; white codes and ends of wing tip tanks. National markings in six position; unit badge on tail booms



Profiles 1:72 Scale
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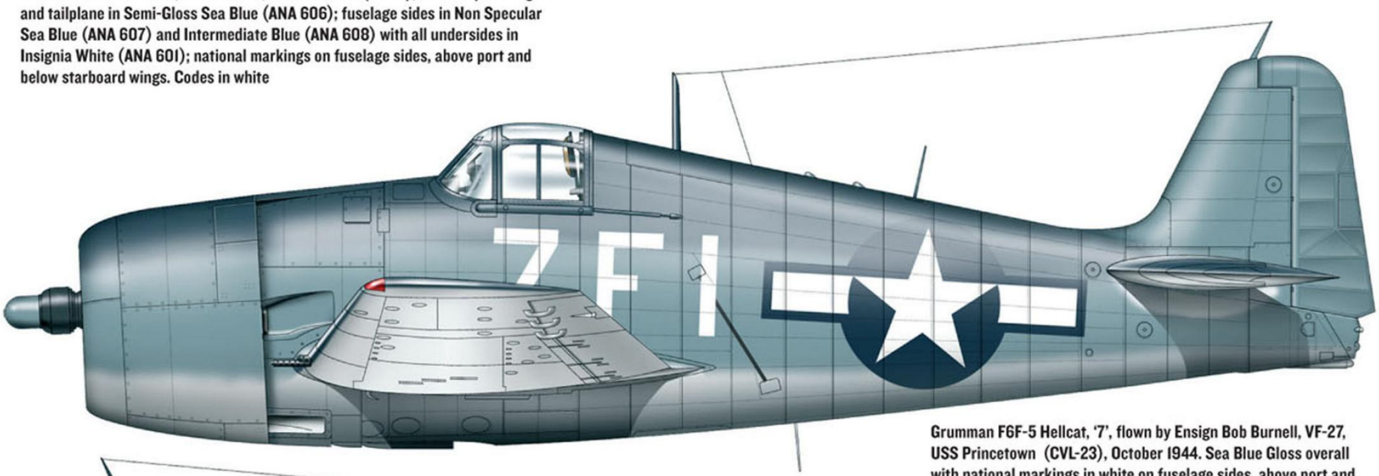
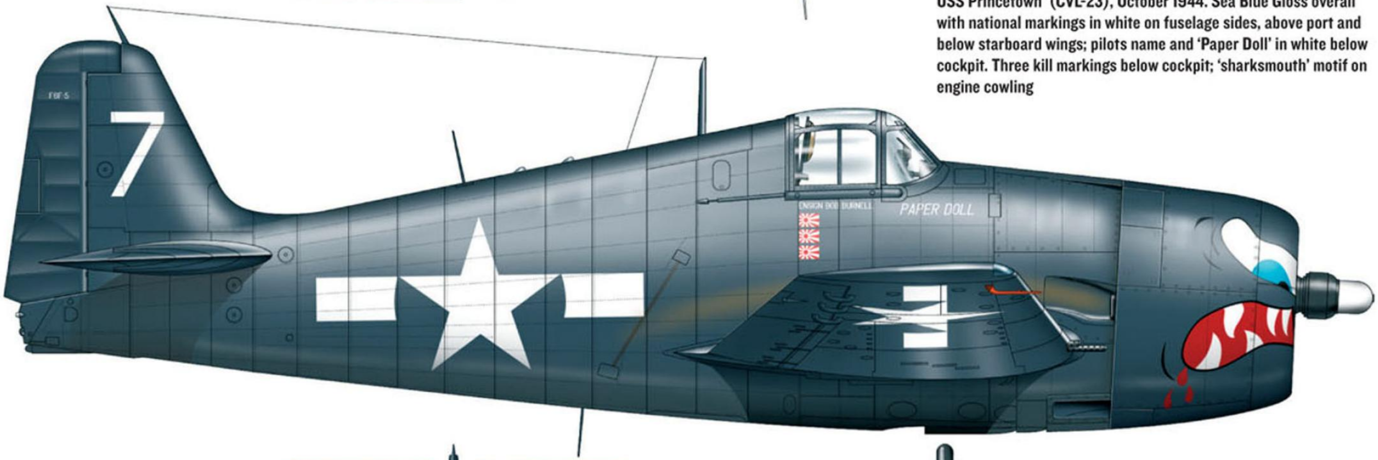
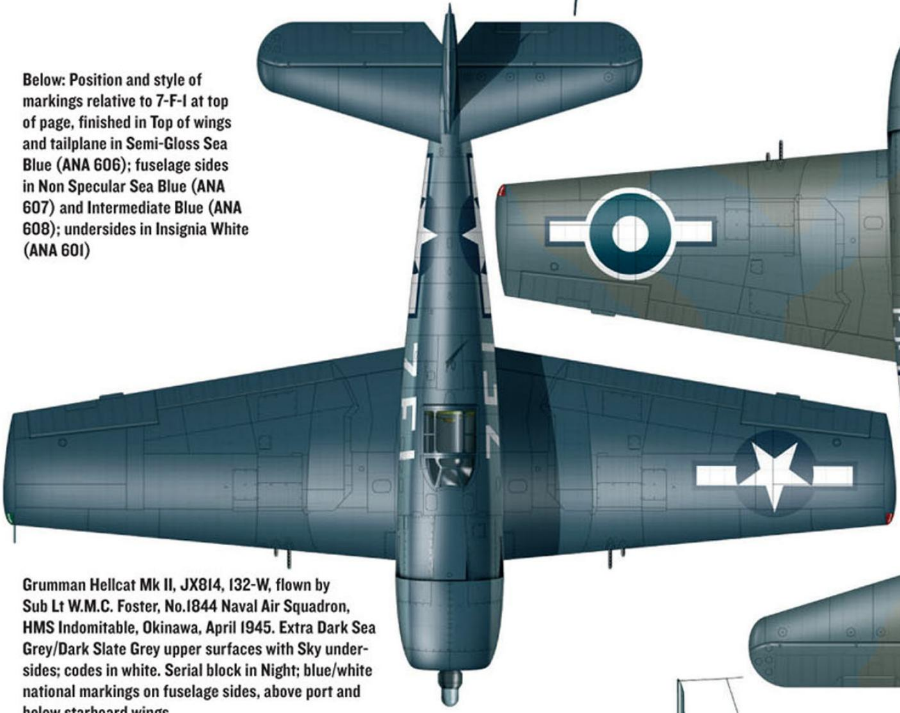
Grumman F6F-5 Hellcat, 7-F-1 of VF-7, USS Hancock (CV-19), 1944. Top of wings and tailplane in Semi-Gloss Sea Blue (ANA 606); fuselage sides in Non Specular Sea Blue (ANA 607) and Intermediate Blue (ANA 608) with all undersides in Insignia White (ANA 601); national markings on fuselage sides, above port and below starboard wings. Codes in white

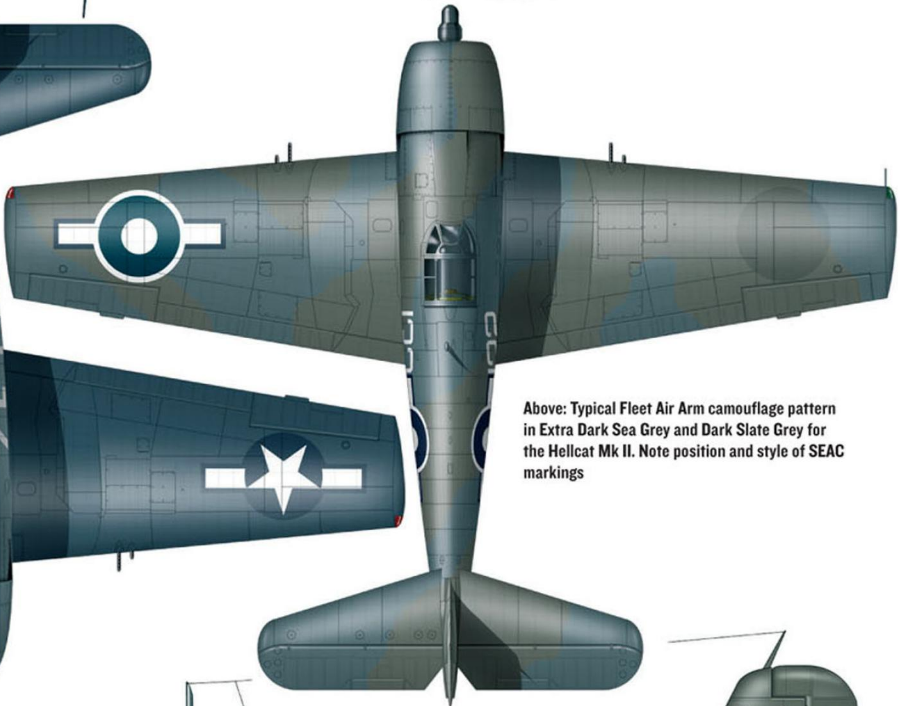


Grumman F6F-5 Hellcat, '7', flown by Ensign Bob Burnell, VF-27, USS Princetown (CVL-23), October 1944. Sea Blue Gloss overall with national markings in white on fuselage sides, above port and below starboard wings; pilots name and 'Paper Doll' in white below cockpit. Three kill markings below cockpit; 'sharksmouth' motif on engine cowling



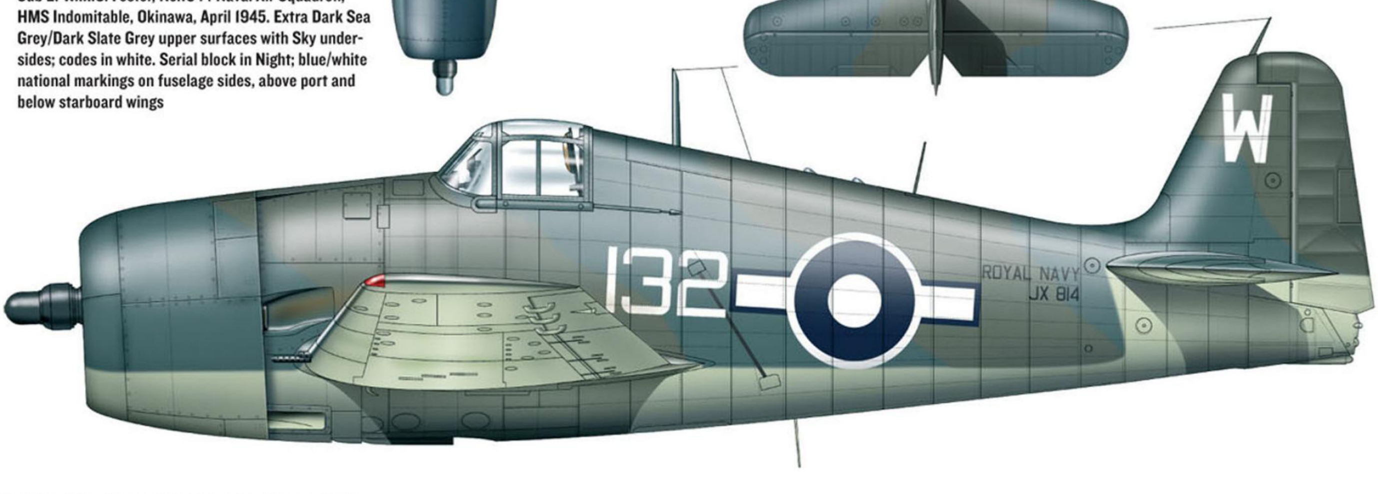
Below: Position and style of markings relative to 7-F-1 at top of page, finished in Top of wings and tailplane in Semi-Gloss Sea Blue (ANA 606); fuselage sides in Non Specular Sea Blue (ANA 607) and Intermediate Blue (ANA 608); undersides in Insignia White (ANA 601)



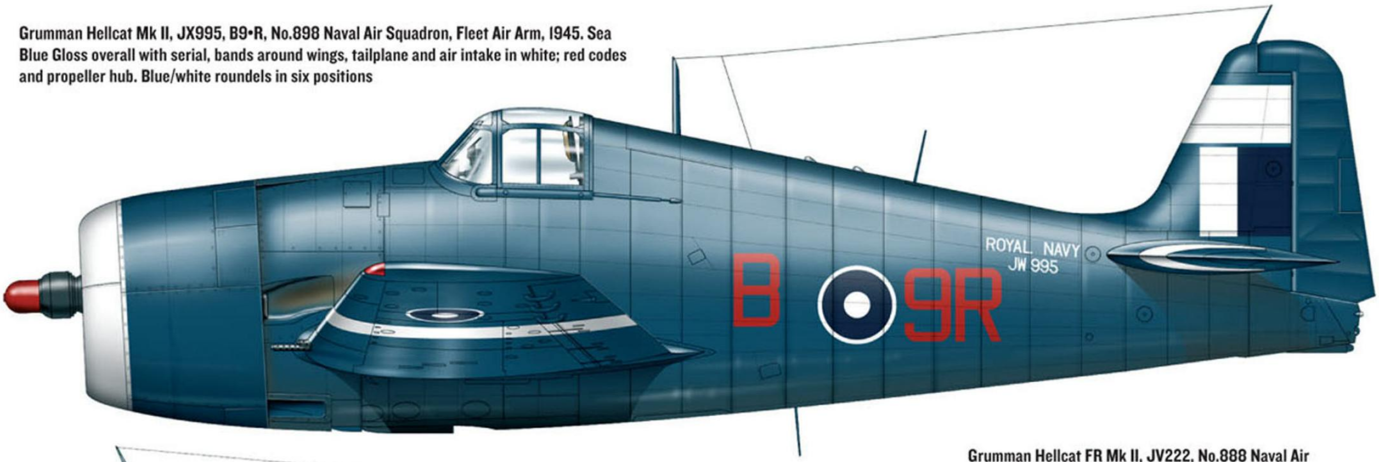


Above: Typical Fleet Air Arm camouflage pattern in Extra Dark Sea Grey and Dark Slate Grey for the Hellcat Mk II. Note position and style of SEAC markings

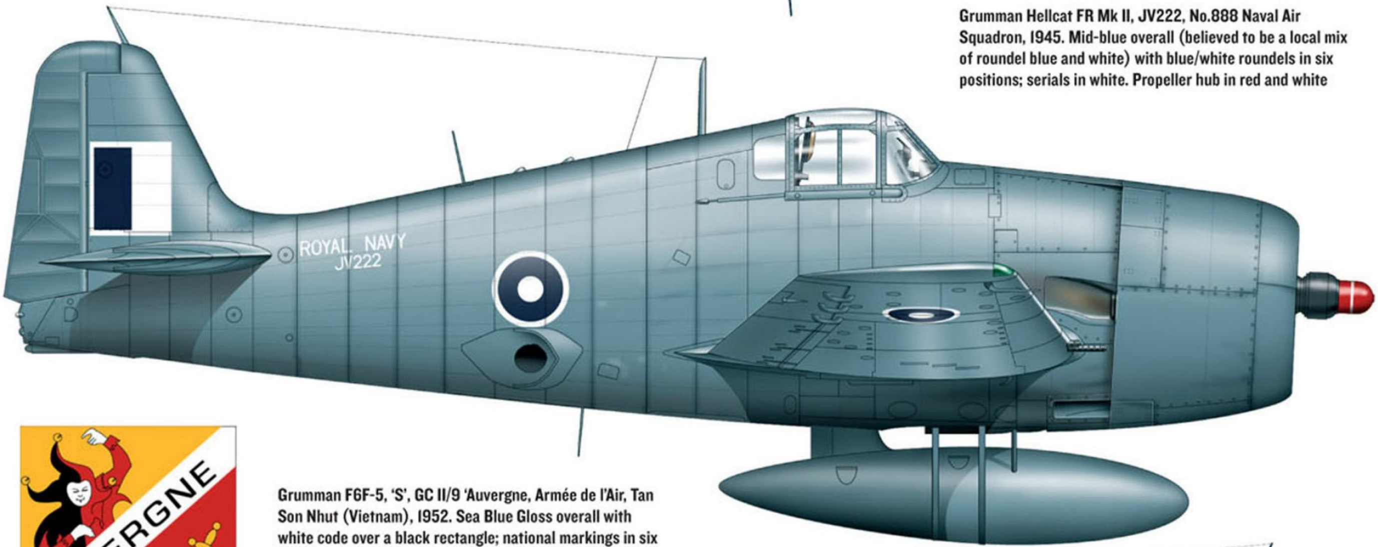
Grumman Hellcat Mk II, JX814, 132-W, flown by Sub Lt W.M.C. Foster, No.1844 Naval Air Squadron, HMS Indomitable, Okinawa, April 1945. Extra Dark Sea Grey/Dark Slate Grey upper surfaces with Sky undersides; codes in white. Serial block in Night; blue/white national markings on fuselage sides, above port and below starboard wings



Grumman Hellcat Mk II, JX995, B9•R, No.898 Naval Air Squadron, Fleet Air Arm, 1945. Sea Blue Gloss overall with serial, bands around wings, tailplane and air intake in white; red codes and propeller hub. Blue/white roundels in six positions



Grumman Hellcat FR Mk II, JV222, No.888 Naval Air Squadron, 1945. Mid-blue overall (believed to be a local mix of roundel blue and white) with blue/white roundels in six positions; serials in white. Propeller hub in red and white



Grumman F6F-5, 'S', GC II/9 'Auvergne, Armée de l'Air, Tan Son Nhut (Vietnam), 1952. Sea Blue Gloss overall with white code over a black rectangle; national markings in six positions. Unit badge carried on both sides of cowling

Grumman F6F-5 Hellcat, 348/11.F.31, of Flotille 11, Aéronavale, operating in Indo China, 1945. Gloss Sea Blue overall with red propeller hub. National markings in six positions, together with tricolour on rudder. Codes and serial in white; unit badge carried on fin, both sides; '348' on rear fuselage sides in yellow

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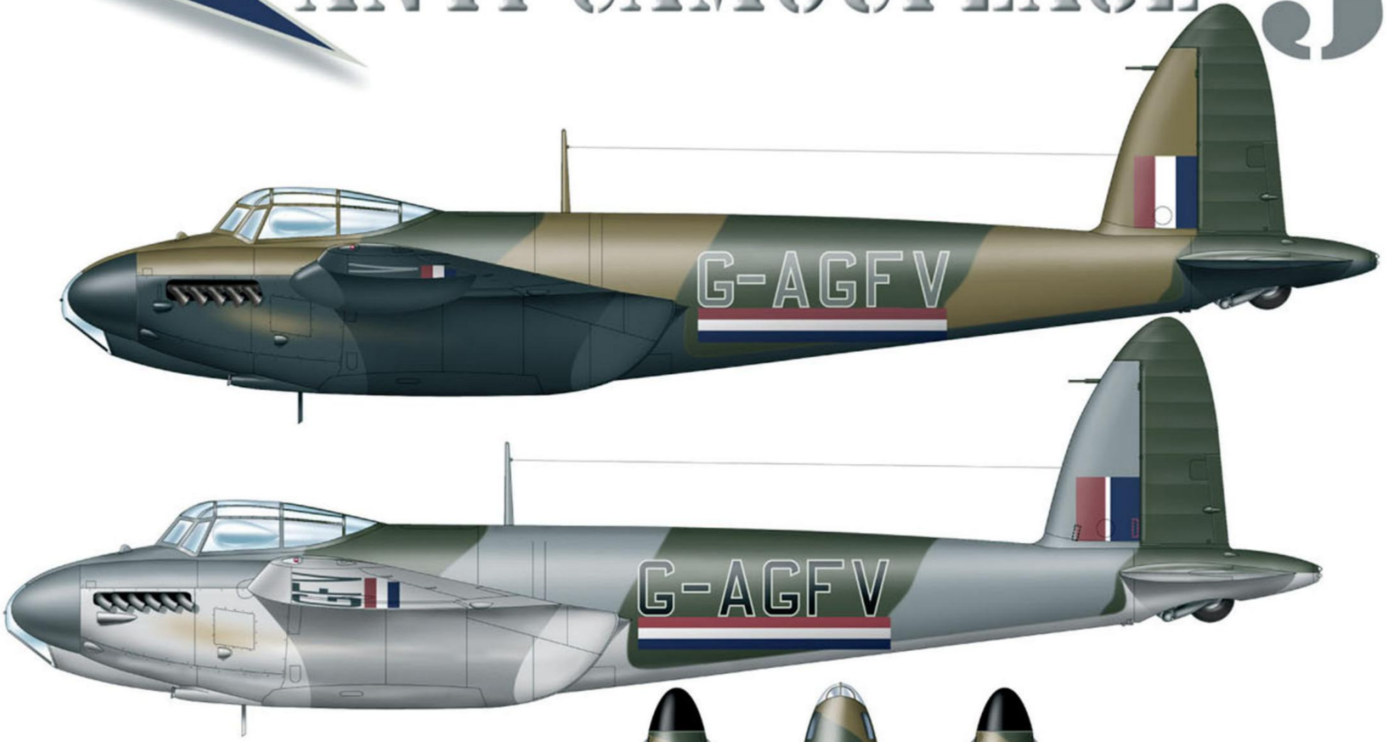
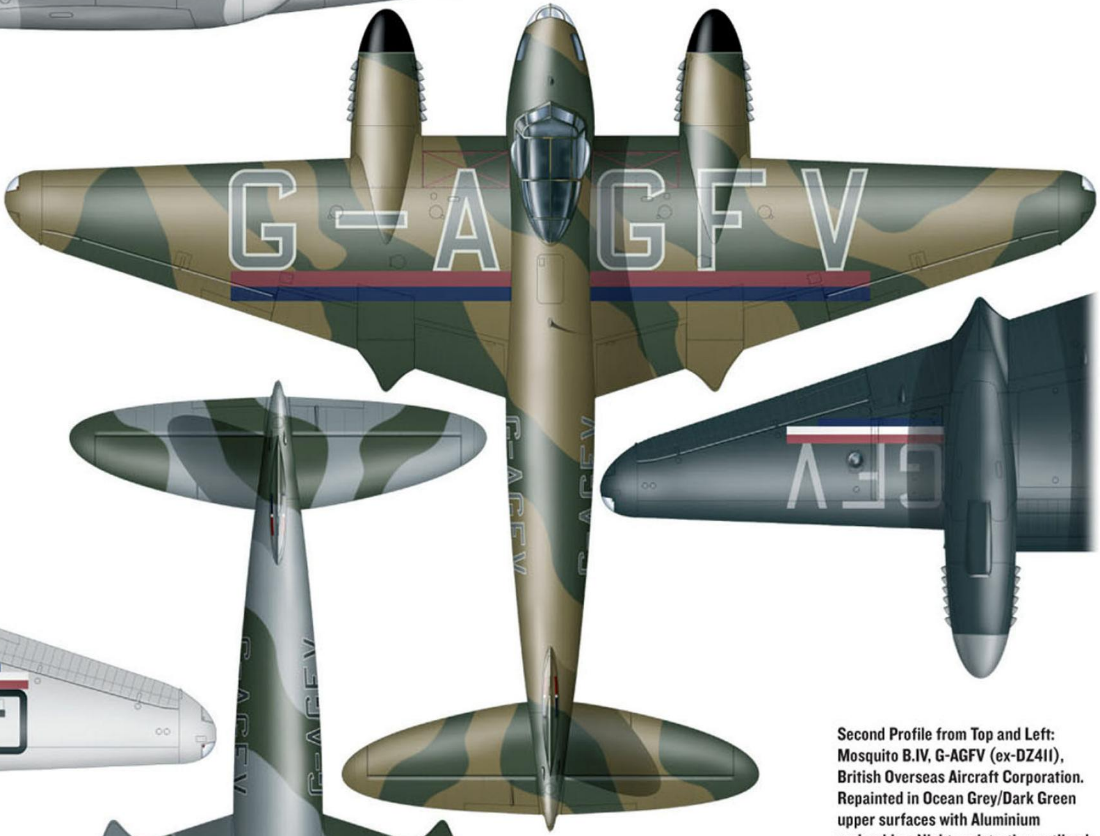
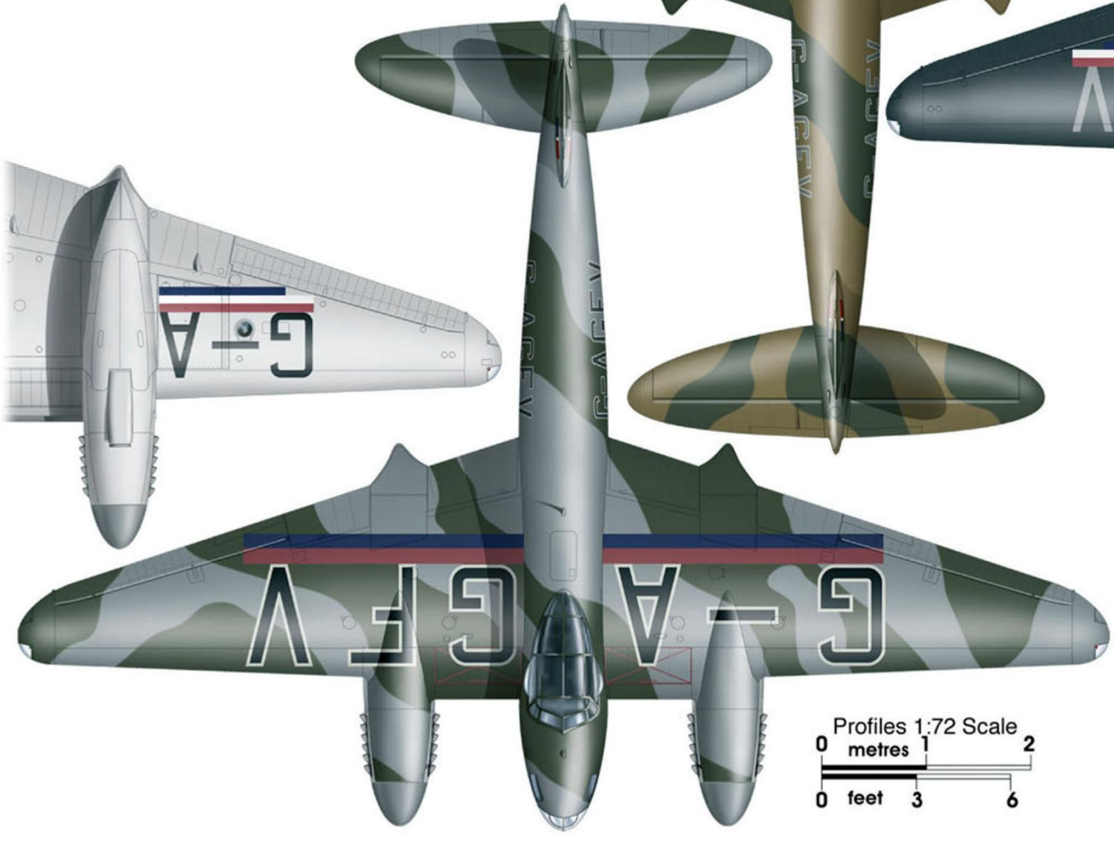
ANTI-CAMOUFLAGE - 3



Top of page and Right: Mosquito B.IV, G-AGFV (ex-DZ411), British Overseas Aircraft Corporation. Dark Earth/Dark Green upper surfaces with Night undersides; Medium Sea Grey registration letters outlined in light grey, repeated above wings; registration below wings in Medium Sea Grey only. Tricolour bars in red/white/blue below letters on fuselage sides and wings, red/blue only above wings





Second Profile from Top and Left: Mosquito B.IV, G-AGFV (ex-DZ411), British Overseas Aircraft Corporation. Repainted in Ocean Grey/Dark Green upper surfaces with Aluminium undersides; Night registration outlined in light grey, repeated above wings; registration below wings in Night only. Tricolour bands on fuselage sides and below wings; red/blue only beneath registration above wings

Mosquito FB.VI, G-AGGD (ex-HJ681), British Overseas Airways Corporation. Extra Dark Sea Grey/Dark Slate Grey upper surfaces with Sky undersides; registration letters on fuselage sides and above wings in Medium Sea Grey with light grey outline; registration repeated below wings in Night only. Tricolour bands on fuselage sides and below wings; red/blue only beneath registration above wings

Above and Left: Mosquito FB.VI, G-AGGF (ex-HJ720), British Overseas Airways Corporation. Extra Dark Sea Grey/Dark Slate Grey upper surfaces with Sky undersides. Registration letters on fuselage sides and above wings in Medium Sea Grey outlined in light grey; registration below wings in Night only. Tricolour beneath registration on fuselage sides and below wings; red/blue only beneath registration above wings

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Original Artwork by
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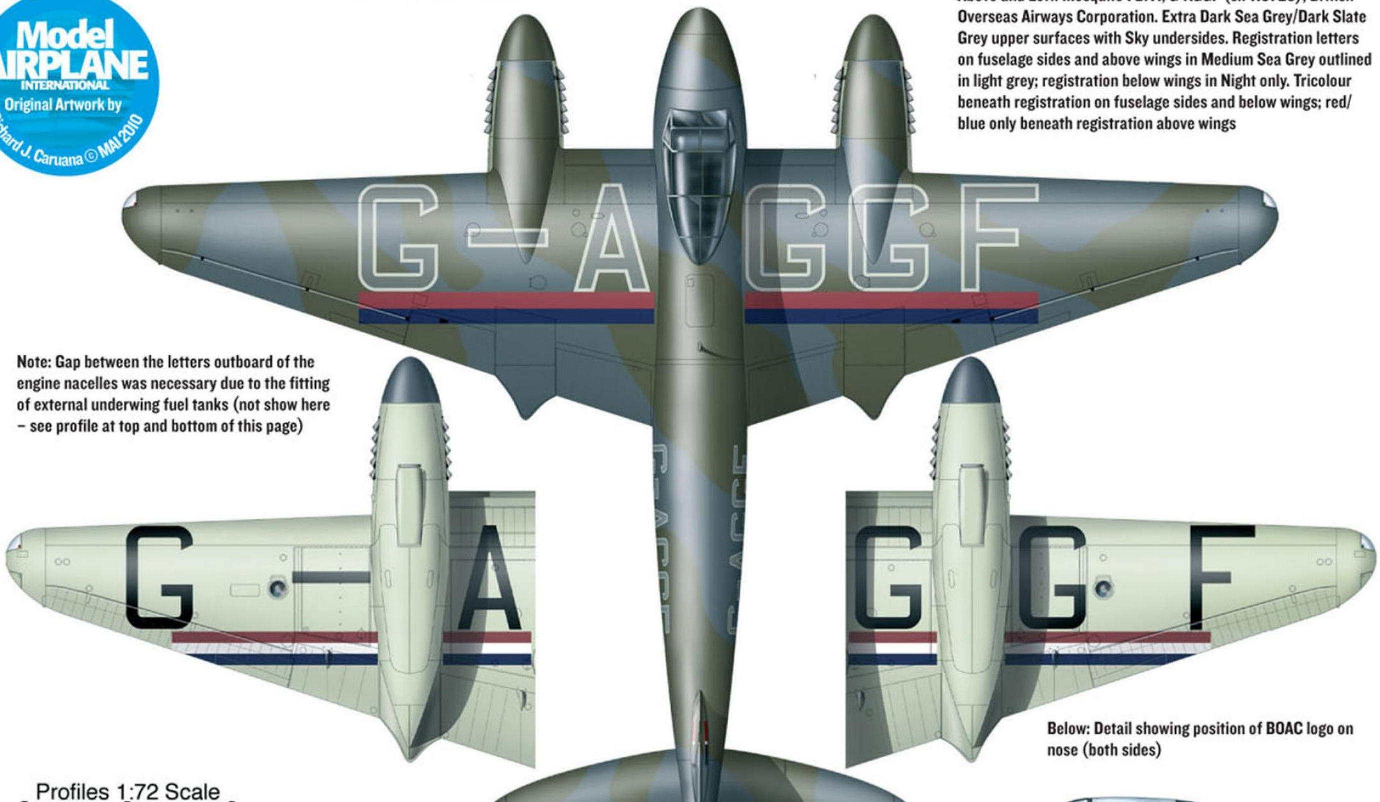
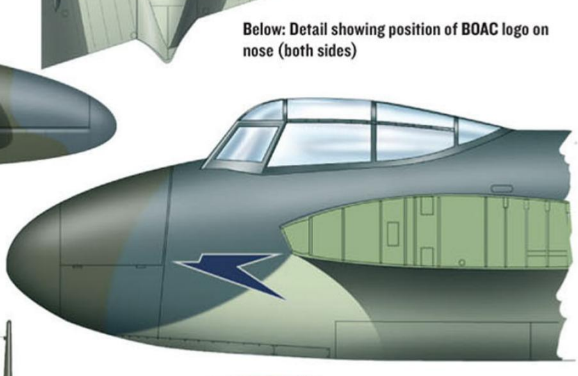


Note: Gap between the letters outboard of the engine nacelles was necessary due to the fitting of external underwing fuel tanks (not show here – see profile at top and bottom of this page)

Below: Detail showing position of BOAC logo on nose (both sides)



Profiles 1:72 Scale
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Below: Mosquito FB.VI, G-AGGC (ex-HJ680), British Overseas Airways Corporation. Extra Dark Sea Grey/Dark Slate Grey upper surfaces with Night undersides; registration letters in Medium Sea Grey, outlined in light grey, in all positions. Tricolour beneath fuselage registration and below wings; red/blue only beneath registration above wings

SAAB AJ 37 Viggen of F.6 seen in company with an A 32 Lansen at the time of the latter's retirement from frontline service (SAAB-Scania)

SAAB 37 VIGGEN

WE MAKE AIRCRAFT. Three words that describe in a nutshell the Saab Aircraft Division and its long history as a leading designer and manufacturer of some of the most advanced aircraft in the world. In a brochure commemorating its first 50 years of activity (1937-1987) the company claims that it has "built up a knowledge base second to none. We design and develop. We test and produce. We follow up and support. In fact, we pride ourselves on a level of technology comparable with the best in world aviation".

SYSTEM 37

The Saab 37 Viggen multi-mission combat aircraft was to become the major component in the System 37 weapon system for the Swedish Air Force (SwAF). In brief, System 37 comprised the Viggen aircraft with powerplant, airborne equipment, armament, ammunition and photographic equipment, special ground servicing equipment including test equipment and also special training equipment including simulators. Particular attention was paid to the optimum adaptation of System 37 to the SwAF base organisation and air defence control stem (STRIL 60).

From the outset, the Saab 37 was designed as a basic platform which could be readily adapted to fulfil four primary role: attack, interception, reconnaissance and training, thus providing the SwAF with a completely integrated weapons system based on the concept pioneered in the USA.

Each mission-optimised version was to have a secondary role, for example, the attack variant had a secondary interceptor capability. The specification was highly demanding for its time and one that obviously called for a highly sophisticated warplane. Design definition was completed in 1962 and a development contract signed in October of that same year. The project was assigned the name Viggen (Thunderbolt).

Prolonged research led to adoption of a then unique canard configuration for the combat aircraft that was to form the airborne component of the weapon system. This configuration, combined with engine thrust reversing, automatic speed control in the approach, a head-up display (HUD) and a landing gear designed for no-flare, high-sink-rate (carrier-type) landings, was adopted to provide an excellent STOL performance so that the Viggen would be able to operate from short runways and sections of roadway about 1,640ft in length, greatly increasing flexibility of dispersed operations. This capability was frequently demonstrated at major international airshows in Europe where spectators remaining in awe at the Viggen's short take-offs and incredibly tight turns.

Combined with an afterburning derivative of the Pratt & Whitney JT8D turbofan, the configuration permitted the Saab 37 to cruise economically and at the same time possessed an acceleration and climb performance required for interception duties.

The Viggen's pilot sits strapped to a zero-zero ejection seat in an air-conditioned, heated and pressurised cockpit, protected by a bird-proof windscreen.

Much of the capability of the aircraft is the result of the advanced contemporary avionics, including a HUD linked via an air-data computer to a digital fire-control system, ECM and radar warning equipment for its own protection, Doppler radar and radar altimeter for navigation and a tactical instrument landing system plus a blind-landing guidance system for landing in any kind of weather, an important consideration in view of the Scandinavian environment. The Viggen was designed for long alert periods.

An auxiliary power unit on the ground provided electric power for its equipment and cool or hot air as necessary. During high readiness alerts the engine could be idled with fuel spent being continuously replaced via a special fuel line. The pilot could accelerate immediately after take-off had been ordered. Long combat air patrols was achieved thanks to the low fuel consumption of the engine at reduced speeds.

Maintenance and servicing on the Viggen was facilitated by suitable location of equipment and good accessibility through the many inspection doors that cover one quarter of the total surface of the aircraft. Most work could take place at comfortable heights and the equipment was been grouped in such a way that line-replaceable units have a weight suitable for easy handling. Electronic equipment was of plug-in design. Part replacement times varied from five minutes for a radio to four hours for the engine, which could be replaced in the open. Of the total maintenance work, 46% related to the engine, 23% to the electronics and 31% to the basic aircraft. Unique for Sweden was the fact that turn-round between missions could be carried out by a team of five conscript personnel under the command of a chief mechanic. The aircraft could be made ready for its next mission in less than 10 minutes. This requirement resulted in stringent demands on easy maintenance and a high level of personnel training.

The first of seven Viggen prototypes flew for the first time on 8th February 1967, and by April 1969 all six single-seat prototypes were flying. A number of airframe parts were also completed for static testing. Development priority was assigned to the AJ 37 attack variant. The seventh Viggen became the prototype for the tandem two-seat Sk 37 operational trainer performing its maiden flight on 2 July 1970. The first production AJ 37 followed on 23 February 1971, and initial deliveries began to Flgflottilj 7 (F7) on 21 June 1971. Introduction of the Sk 37 into the Linköping assembly plant at an early stage was to prove a vital factor in the successful service phase-in of the Viggen. Evolution of the fighter variant was viewed as a somewhat longer-term programme, so that adequately advanced intercept radar and suitable air-air weapons could be developed to endow the SwAF with the greatly improved air defence capabilities it sought. Whereas changes to the Viggen to produce the Sk 37 trainer and the SF 37/SH 37 reconnaissance variants were minimal and confined mostly to areas dictated by mission requirements, those foreseen for the JA 37 fighter were more fundamental, so much so it was soon being viewed as a second-generation aircraft.

IN SERVICE

Re-equipment of three wings operational on the AJ 37s began in mid-1971 and the first squadron of F7 Wing at Såtenås was declared operational early in 1973. Conversion of F15 at Söderhamn and F6 at Karlsborg was initiated in 1974. SF37s and SH 37s entered service with F13 at Norrköping, F17 at Ronneby and F21 at Luleå, while all Viggen Wings operated Sk 37 trainers. First deliveries of JA 37 fighters were made to F13 at Norrköping in 1979 replacing J 35F Drakens, and continued with F1 at Ronneby and F21 at Luleå.

The service life of the Viggen with the SwAF can be summarised as follows. F4 at Frösön was formed on two units of JA 37s, Division 1 (David Röd) and Division 2 (David Blå) between 1983 and 2003; for a short period between 1999 and 2003 it also operated a unit of Sk 37s and Sk 37Es. F6 at Karlsborg operated two Divisions of AJ 37s (1: Filip Röd; 2 Filip Blå) between 1987 and 1993 together with the closure of its base. F7 at Såtenås

The JA 37 represented the all-weather version of the Viggen, seen here during its introduction into service fitted with six air-to-air missiles (SAAB-Scania)

was made up of three units of AJ 37s starting in 1973: Division 1 (Gustav Röd), Division 2 (Gustav Blå) and Division 3 (Gustav Gul). Up to 1974 F7 also operated a unit of Sk 37s while Division 3 was disbanded in 1977; the other two units became the first to convert to the Gripen between 1997 and 1998.

F10 at Ängelholm had only one Division (Johan Röd) and flew AJ 37s, SF 37s and SH 37s from July 1993 to April 2000 when it also converted onto the Gripen. F13 at Norrköping flew a unit (Division 1 Martin Röd) of SF 37s from 1976 and additionally SH 37s as from the following year; Division 2 (Martin Blå) continued to fly Drakens until the arrival of the JA 37 in 1982. Both Divisions closed down in summer 1993. F15 at Söderhamn began by operating a unit of Sk 37s towards the end of 1974 until it formed two Divisions of JA 37s, Olle Röd in 1975 and Olle Blå the following year, continuing to fly the type up disbandment in June 1997. F16 at Uppsala was equipped with two Divisions of JA 37s (Petter Blå and Petter Gul) between 1986 and 2003. F17 at Ronneby was formed Division 1 (Quintus Röd) on SF/SH 37s in 1978 while Division Two (Quintus Blå) converted from Drakens to JA 37s in 1982. Division 1 reverted to the air defence role in summer of 1993 and received JA 37s until both units converted to the Gripen towards the end of 2002.

F21 at Luleå was to become the unit to hold onto the Viggen for the longest period of operational life. Division 1 (Urban Röd) was formed on the SF/SH 37 in July 1979 while Division 2 (Urban Blå) and Division 3 (Urban Gul) began to operate JA 37s in July 1983. In 2003 Division 1 was expanded to include new deliveries of the Sk 37E thus becoming a multi-role unit until final retirement of the Viggen was marked at Luleå with a ceremony on 25 November 2005.

VIGGEN DESCRIBED

As already mentioned, the most prominent feature of the Viggen's configuration is its large canard delta wing. The main wing had two-section hydraulic-actuated powered elevons on each trailing edge, which could be operated differentially or in unison. It had compound sweep on the leading edge, with the outer sections of the wing having an extended leading- edge. The canard foreplane had trailing edge flaps. Extensive use was made of metal-bonded honeycomb panels for wing, control surfaces, foreplane flaps, rudder, main landing gear doors and other areas.

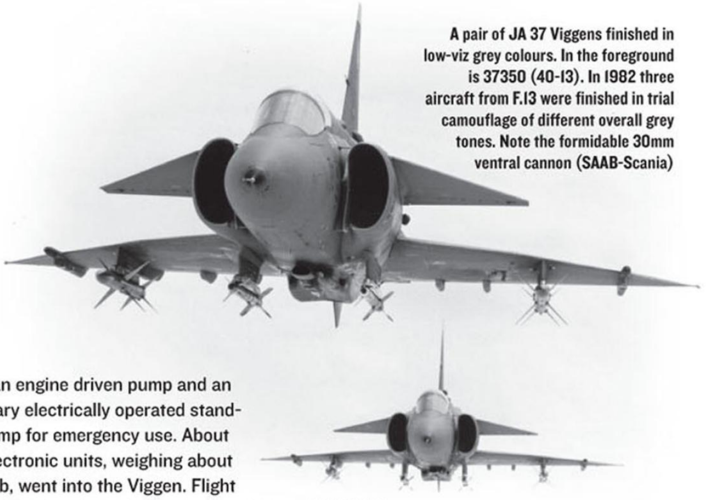
The fuselage was of conventional all-metal semi-monocoque structure, using light metal forgings and heat-resistant plastic bonding. Titanium was used for the engine firewall and some other areas. Four plate-type airbrakes were fitted, one on each side and two below the fuselage. The nose cone could be pulled forward on tracks for easy radar access. The main fin had a powered rudder and could be folded down to port to permit passage through low hangar doors. The retractable tricycle under- carriage was designed for a maximum rate of sink of 985 ft/min. The twin-wheel nose unit was power steerable and retracted forward. Each main unit had two wheels in tandem and retracted inward into the main wing and fuselage as the main oleos shortened during retraction.

Powerplant of all variants – except the JA 37 – was the Volvo Flygmotot RM8A (a supersonic development of Pratt & Whitney's JT8D-22) turbofan, fitted with a Swedish-developed afterburner and thrust reverser. It was rated at 14,770lbst dry and 26,015lb st in afterburner. The JA 37 had the more powerful RM8B ver-sion, rated at 16,203bst dry and 28,108lbst in afterburner. An interesting feature of the thrust reversers was that the doors were actuated automatically by the compression of the oleo as the nose gear struck the runway, thrust being deflected for ward via three annular slots in the ejector wall. Fuel was contained in one tank in each wing, a saddle tank over the engine, one tank in each side of the fuselage and one behind the cockpit. The central fuselage tank was kept continuously filled from the other tanks. An external tank could be carried on the centreline pylon and was normally a permanent fit on the two-seat Sk 37 as this variant lacked the forward fuselage tank.

The two-seat Viggen version, the Sk 37, retains all the multi-purpose combat capabilities of its single-seat stablemate. Note the periscope fairings between the two cockpits (SAAB-Scania)

The fully adjustable rocket-assisted ejection seat was made by Saab-Scania. Cockpit pressurisation, heating and air-conditioning was achieved by engine bleed air. The clamshell canopy hinged rearward and the windscreen could withstand a 2.2lb bird impact at 683 mph. The JA 37 cockpit was redesigned and optimised for the intercept mission. The Sk 37 had individual canopies and twin periscopes were fitted between front and rear canopies.There were two independent hydraulic systems, each with an engine driven pump and an auxiliary electrically operated standby pump for emergency use. About 50 electronic units, weighing about 1,323lb, went into the Viggen. Flight equipmentation included and automatic speed control, HUD (Smiths in JA 37, Marconi-Elliott in other variants), AGA aircraft attitude instruments and radio, Phillips air data computer in AJ37 and Garret-Air Research in JA 37, Honeywell radar altimeter, Decca Doppler Type 72 navigation equipment and L.M. Ericson radar. There was a SATT radar warning system, Svenska Radio radar display system and ECM and AIL Tactical Instrument Landing System. Most electronic equipment was connected to the central digital computer that could check out and monitor these systems on the ground or in flight. The JA 37 had a ram air intake beneath the fuselage for electronics cooling.

All armament on the Viggen was carried externally, on seven permanent attachment points, three under the fuselage and two under each wing. An additional hardpoint could be fitted under each wing if necessary. Primary armament consisted of the Saab RB04E or RB05A air-to-surface missiles (ASMS) for the attack role and pods of Bofors 135mm air-to-surface rockets, bombs or podded 30mm Aden guns. The AJ 37 could be adapted for the intercept role armed with RB24 (Sidewinder) or RB28 (Falcon) AAMS. Fire control was handled by a Saa-bScania CK-37 digital computer. Both SF 37 and SH 37 reconnaissance versions could carry two AAMs on the outboard wing stations for self-defence. Other external mission equipment included drop-tanks under the fuselage and ECM pods on each of the inboard underwing pylons. The SH 37 could carry a drop-tank on the centreline hardpoint, a night recce pod on the port hardpoint and a long-range camera pod or Red Baron night recce pod to starboard. The JA 37 permanently carried a ventral pack, offset to port of the centreline, containing one 30mm Oerlikon KCA long-range cannon with 150 rounds, firing at the rate of 1,350 rounds per minute. This gun installation permitted retention of the three under-fuselage hardpoints. This version of the Viggen also had an improved fire control system and an advanced target search and acquisition system. Other armament could include two RB71 (BAe Dynamics Skyflash) and four RM24 (Sidewinder) AAMS. Four pods containing a total of twenty-four 135mm rockets could be carried for the attack role.


A pair of JA 37 Viggens finished in low-viz grey colours. In the foreground is 37350 (40-13). In 1982 three aircraft from F.13 were finished in trial camouflage of different overall grey tones. Note the formidable 30mm ventral cannon (SAAB-Scania)

VERSIONS

Total production of the initial AJ 37 was of 106 examples (37001-37108) and represented the all-weather attack version that began to replace the Saab A 32A Lansen in SwAF service in mid-1971. It also had a secondary interceptor capability; some of these Viggens were upgraded and redesignated AJS 37.

Eighteen examples of the Sk 37 two-seat trainer were built (37800-37817), some of which were upgraded to Sk 37Es. The SF 37, of which 28 examples were built (37950-37977) was a single-seat all-weather armed photo-reconnaissance fighter intended to replace the S 35E Draken. First flight of the first SF 37 took place on 21 May 1973 and apart from four cameras in the nose it could also carry an external ventral pod with additional photographic equipment. Some were upgraded and became AJSF 37s .

Ordered at the same time as the SF 37, the SH 37 was principally a radar-reconnaissance fighter of which 28 examples were produced (37900-27927); its upgrade was known as the AJSH 37.

The lion's share of Viggen production went to the JA 37 all-weather air-defence fighter of which 149 were built (37301-37449). Four AJ 37s were used in the development of the new fighter with the first being earmarked for control systems tests, flying for the first time on 4 June 1974 while the fourth modified AJ 37 flew in May 1975 and was assigned for electronics testing and later weapon system development. The fifth aircraft in the batch was built as a JA 37 from the outset and performed its maiden flight on 15 December 1975. A series of avionic and software upgrades were made on several JA 37s that were eventually redesignated JA 37C, JA 37D and JA 37Di.

A final mention must be made of the Saab 37X, intended as an export version that was essentially similar to the JA 37. Notwithstanding an aggressive export campaign no foreign sales of the Viggen were ever achieved. However three courses lasting six months each were organised for Austrian Air Force (AAF) pilots under 'Project Polar Light' by F21 at Luleå. This training enabled Austrian pilots to gain experience in flying advanced weapon systems and they flew the type under operational conditions in Sweden.

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Top of Page: SAAB AJ 37 Viggen, 37057/57-7, F.7, Såtenäs, 1973. Natural metal overall with black radome and lettering; standard national markings in six positions

Second from Top: SAAB JA 37 Viggen, 37333/33-17, F.17, Ronneby, 1982. Natural metal overall but with a nose from a splinter camouflaged aircraft (093M Black Green, 326M Dark Green, 322M Medium Green and 507M Tan upper surfaces with 058M Blue Grey underside); Dayglo '33' on find with '17' in yellow on nose

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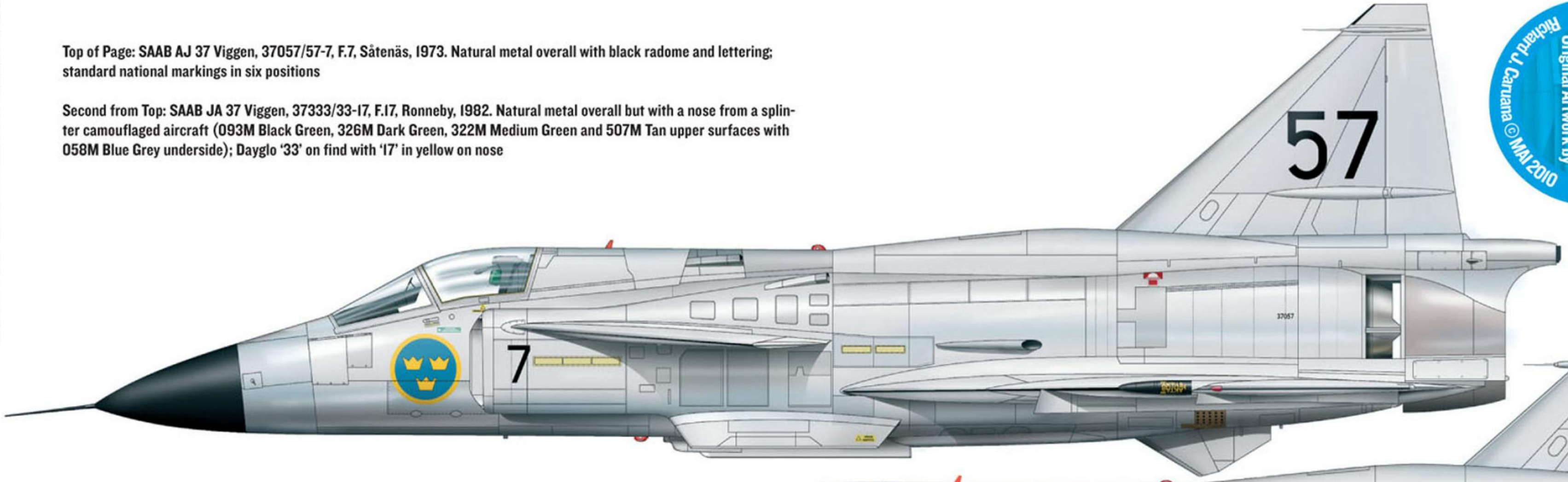

SAAB JA 37 Viggen, 37350/40-13, F.13 (Division 2), Norrköping, 1982. Experimental Blue/Grey overall camouflage finish with lettering in black; national markings of reduced size in six positions

SAAB AJ 37 Viggen, 37040/40-6, F.6, 1985. Splinter camouflage of 093M Black Green, 326M Dark Green, 322M Medium Green and 507M Tan upper surfaces with 058M Blue Grey underside; Dayglo '40' on fin, yellow '6' on nose

Profiles 1:72 Scale

0 METRES 1 2

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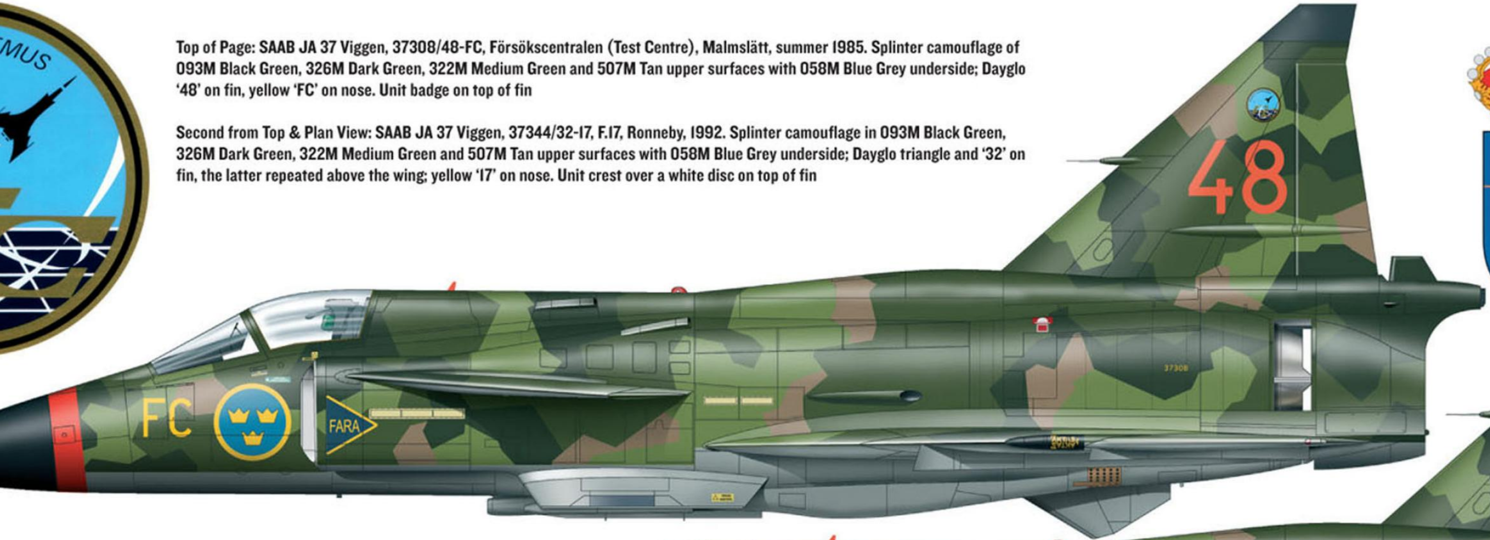
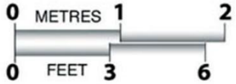
Top of Page: SAAB JA 37 Viggen, 37308/48-FC, Försökscentralen (Test Centre), Malmslätt, summer 1985. Splinter camouflage of 093M Black Green, 326M Dark Green, 322M Medium Green and 507M Tan upper surfaces with 058M Blue Grey underside; Dayglo '48' on fin, yellow 'FC' on nose. Unit badge on top of fin

Second from Top & Plan View: SAAB JA 37 Viggen, 37344/32-17, F.17, Ronneby, 1992. Splinter camouflage in 093M Black Green, 326M Dark Green, 322M Medium Green and 507M Tan upper surfaces with 058M Blue Grey underside; Dayglo triangle and '32' on fin, the latter repeated above the wing; yellow '17' on nose. Unit crest over a white disc on top of fin



Profiles 1:72 Scale



Bottom: SAAB SF 37 Viggen, 37953/06-13, F.13 (Division I), Norrköping, 1986. Splinter camouflage of 093M Black Green, 326M Dark Green, 322M Medium Green and 507M Tan upper surfaces with 058M Blue Grey underside; Dayglo '06' on fin, yellow '13' on nose. Unit badge on fin top

Please note that mask templates for this complex scheme will be available to download from our website (www.modelairplaneinternational.com)

Top of Page: SAAB Sk 37 Viggen, 37806/61-15, F.4, Östersund-Frösön, 1999. Faded splinter camouflage of 093M Black Green, 326M Dark Green, 322M Medium Green and 507M Tan upper surfaces with 058M Blue Grey underside; Dayglo '61' (faded) on fin, yellow '15' on nose; unit badge on top of fin

Second from Top: SAAB JA 37 Viggen, 37325/25-4, F.4, Östersund-Frösön, 1999. Splinter camouflage of 093M Black Green, 326M Dark Green, 322M Medium Green and 507M Tan upper surfaces with 058M Blue Grey underside; Dayglo triangle and 25 on fin, '25' repeated also in Dayglo above the wings. '4' in yellow on nose; unit badge on top of fin

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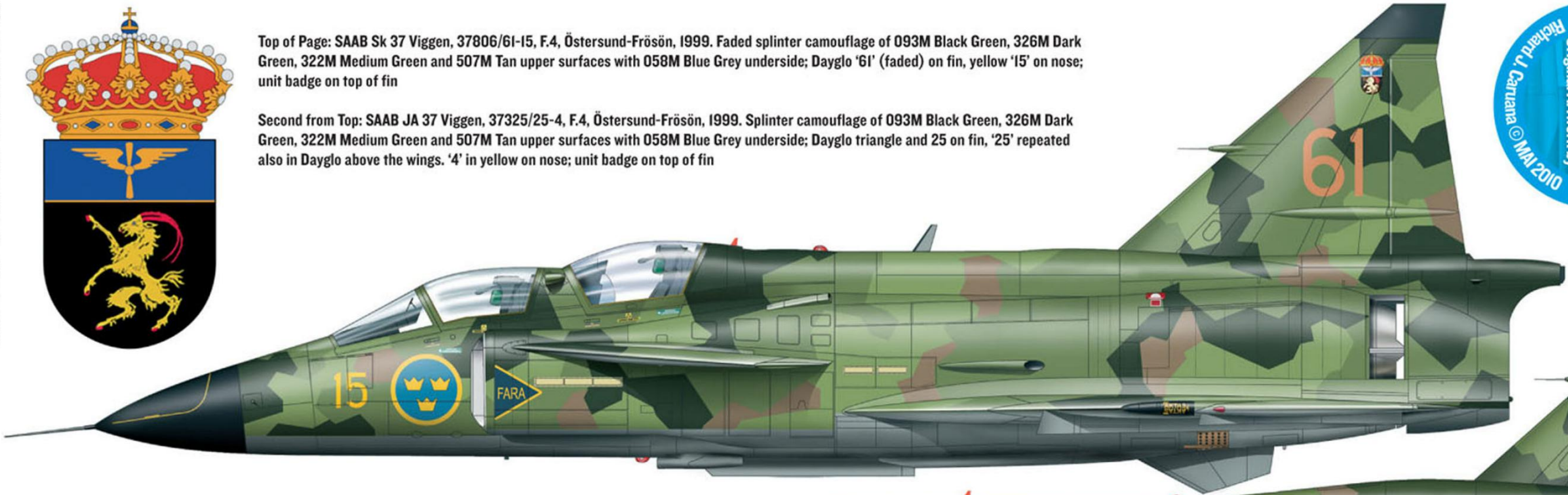
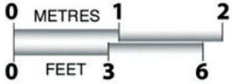


Above: SAAB AJ 37 Viggen, 37094/57-10, F.10, 1996. Fading splinter camouflage scheme; Dayglo '57' on fin, yellow '10' on nose. Unit badge and what appears to be a No. 41 Squadron (RAF) zap on the fin. Note standard practice of placing individual code on mainwheel doors

Right: SAAB AJSF 37 Viggen, 37976/38-7, F.7, Såtenäs, 1995. Splinter camouflage scheme; Dayglo '38' on fin, yellow '7' on nose



Profiles 1:72 Scale

Top to Bottom: SAAB JA 37 Viggen, 08-4, F.4, Östersund-Frösön. Light Ghost Grey FS.36375 upper surfaces with Light Grey FS.36495 undersides; Dayglo and triangle '08' on fin ('08' repeated also in Dayglo above the wings), black '4' on nose. Unit badge on top of fin

SAAB JA 37 Viggen, 37410/P10-16, F.16 (Division 3), Uppsala, 2003. Light Ghost Grey FS.36375 upper surfaces with Light Grey FS.36495 undersides; red vertical tail surfaces with black motif. Yellow 'P10' on fin top, black '16' on nose; Division 3 badge aft of cockpit

SAAB JA 37 Viggen, 37394/47-17, F.17, Ronneby, 2002. Light Ghost Grey FS.36375 upper surfaces with Light Grey FS.36485 undersides; Dayglo triangle and '47' on fin, the latter repeated above the wings. Black '17' on nose and lettering at base of fin; blue/yellow leading edges to all flying surfaces. Unit badge on fin within a white disc, Division I badge aft of cockpit

Top of Page: SAAB JAS 37D (i) Viggen, 37386/4, F.4 retirement from service scheme applied between September and December 2004. Light Ghost Grey FS.36375 upper surfaces with Light Grey FS.36495 undersides; national markings in medium grey; Storsjö 'Great Lake Monster' on nose and Jämtland region colours and crest on fin; end Division of F4 badge on a white disc aft of cockpit

Second from Top: SAAB JA 37D Viggen, 37402/02-21, F.21, Luleå, 2004. Light Compass Grey FS.36375 upper surfaces with Light Grey FS.36495 undersides; blue/yellow/black decoration on vertical tail surfaces with Dayglo '02' superimposed, the latter repeated above the wings. '21' in black on nose; Division I badge aft of cockpit

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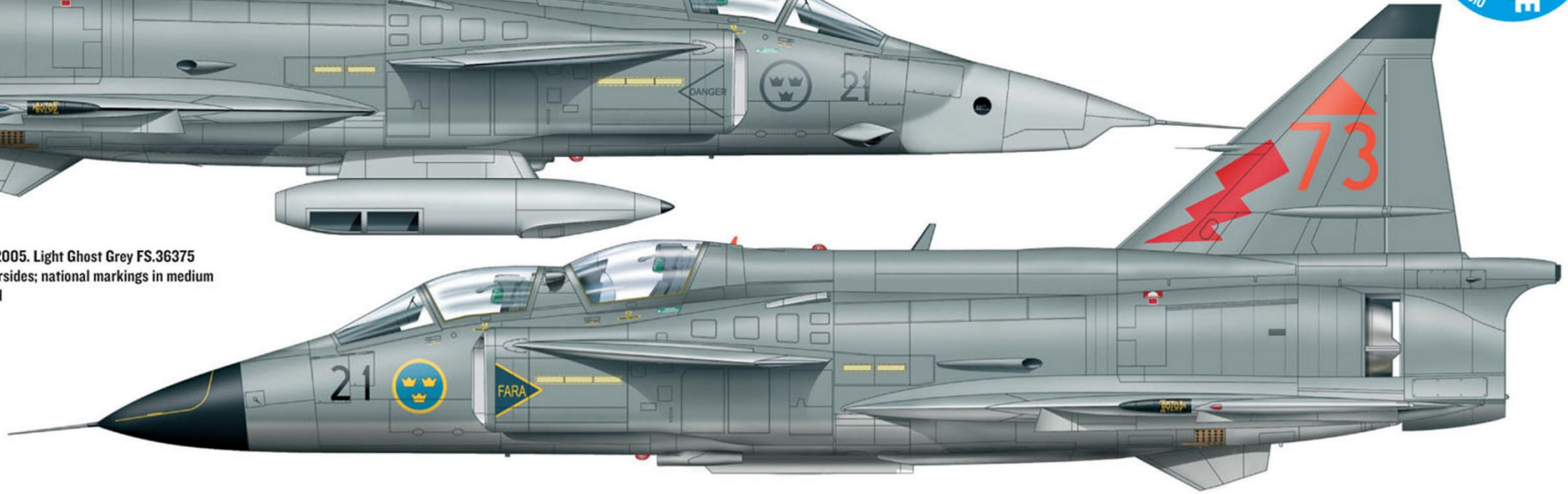
SAAB AJSF 37 Viggen, 37950/48-21, F.21, Luleå, 2003. Light Compass Grey FS.36375 upper surfaces with Light Grey FS.36495 undersides; all markings and lettering in dark grey

SAAB Sk 37E Viggen, 37811/73-21, F.21, Luleà. 2005. Light Ghost Grey FS.36375 upper surfaces with Light Grey FS.36495 undersides; national markings in medium grey. Dayglo '73' and triangle on fin, flash in red



Profiles 1:72 Scale

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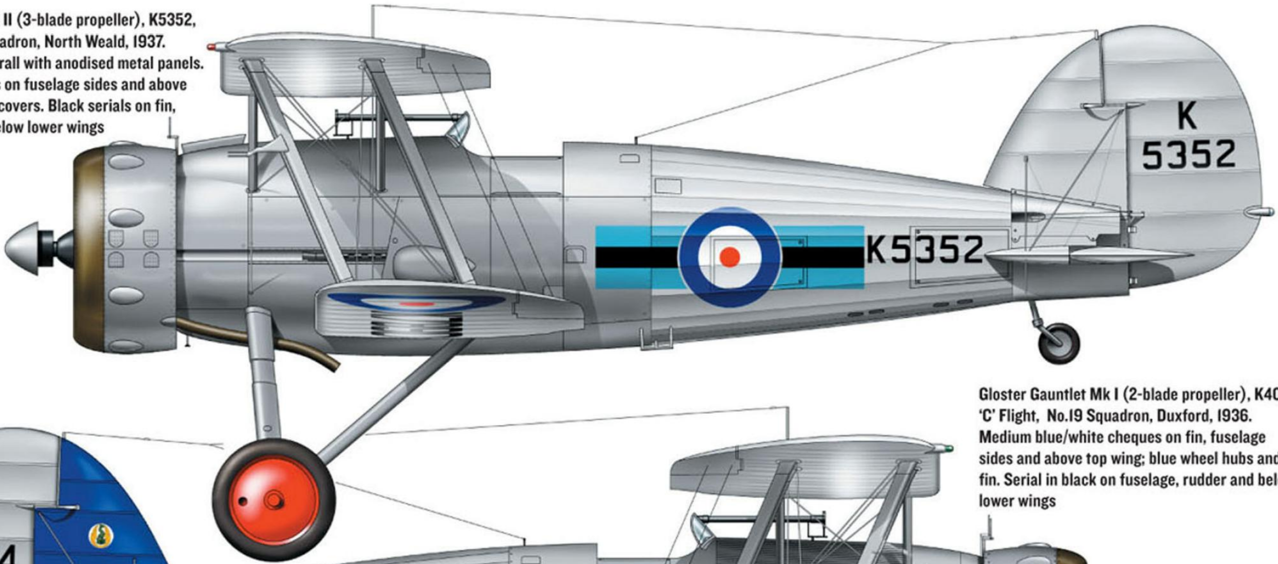
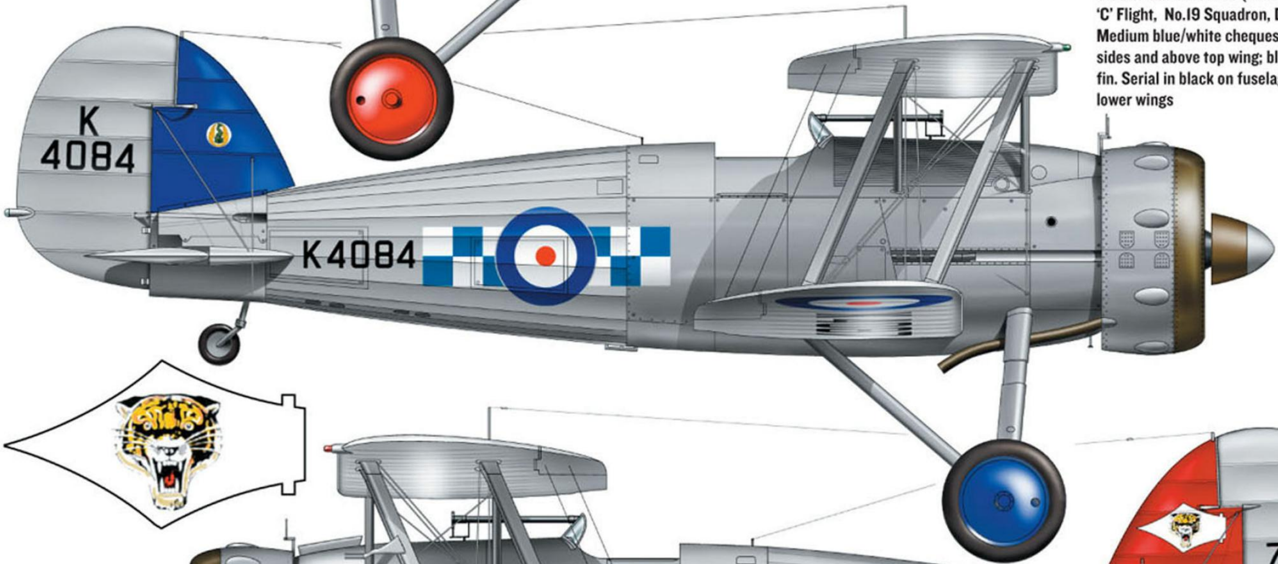
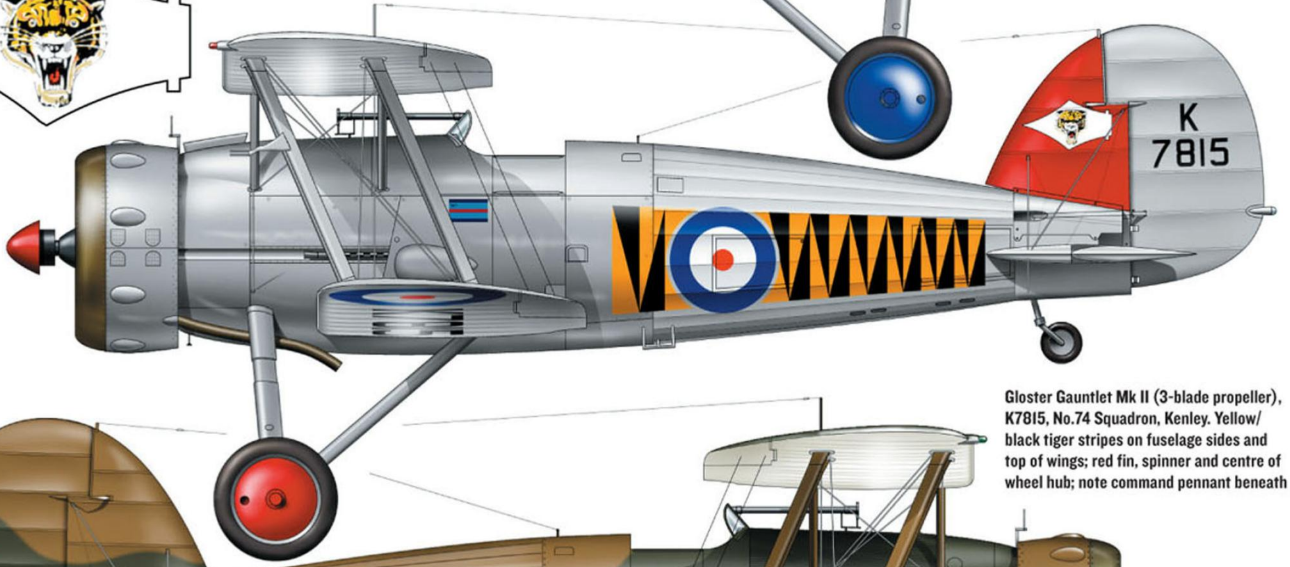
Gloster Gauntlet Mk II (3-blade propeller), K5352, 'A' Flight, No.151 Squadron, North Weald, 1937. Aluminium dope overall with anodised metal panels. Pale blue/black bars on fuselage sides and above top wing; red wheel covers. Black serials on fin, rear fuselage and below lower wings

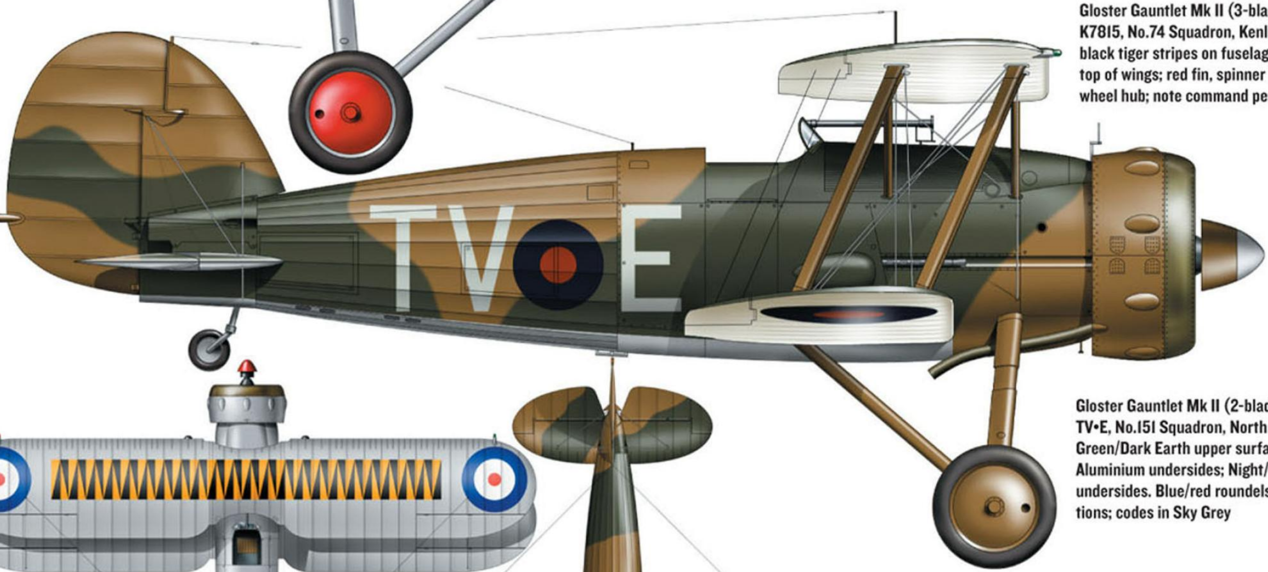


Gloster Gauntlet Mk I (2-blade propeller), K4084, 'C' Flight, No.19 Squadron, Duxford, 1936. Medium blue/white cheques on fin, fuselage sides and above top wing; blue wheel hubs and fin. Serial in black on fuselage, rudder and below lower wings

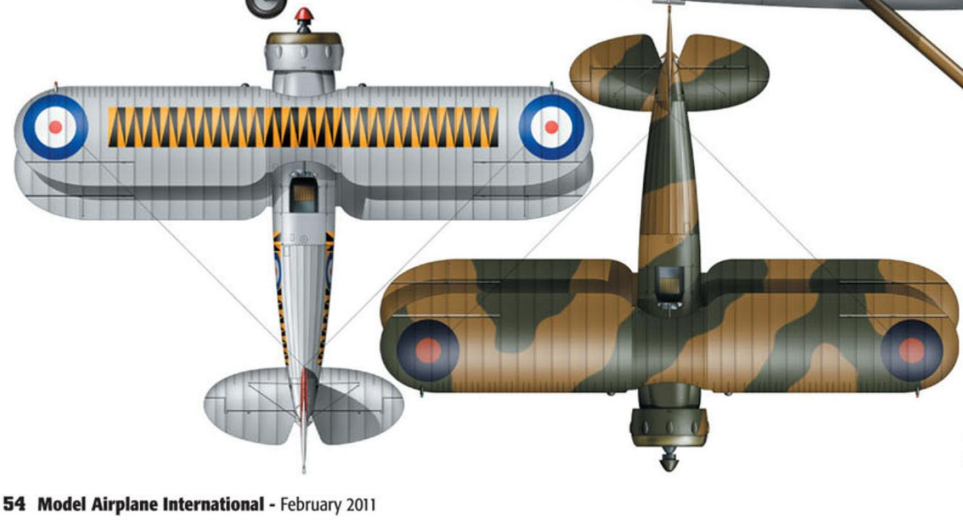




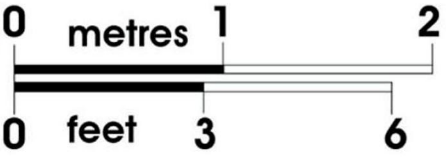
Gloster Gauntlet Mk II (3-blade propeller), K7815, No.74 Squadron, Kenley. Yellow/black tiger stripes on fuselage sides and top of wings; red fin, spinner and centre of wheel hub; note command pennant beneath

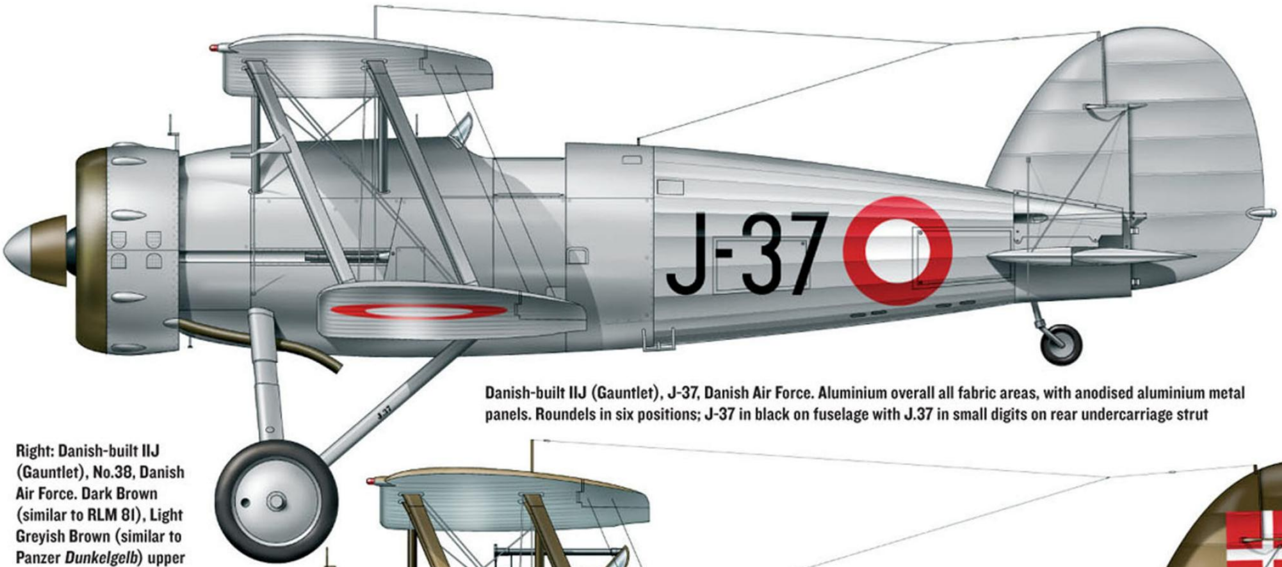


Gloster Gauntlet Mk II (2-blade propeller), TV•E, No.151 Squadron, North Weald. Dark Green/Dark Earth upper surfaces with Aluminium undersides; Night/White wing undersides. Blue/red roundels in six positions; codes in Sky Grey



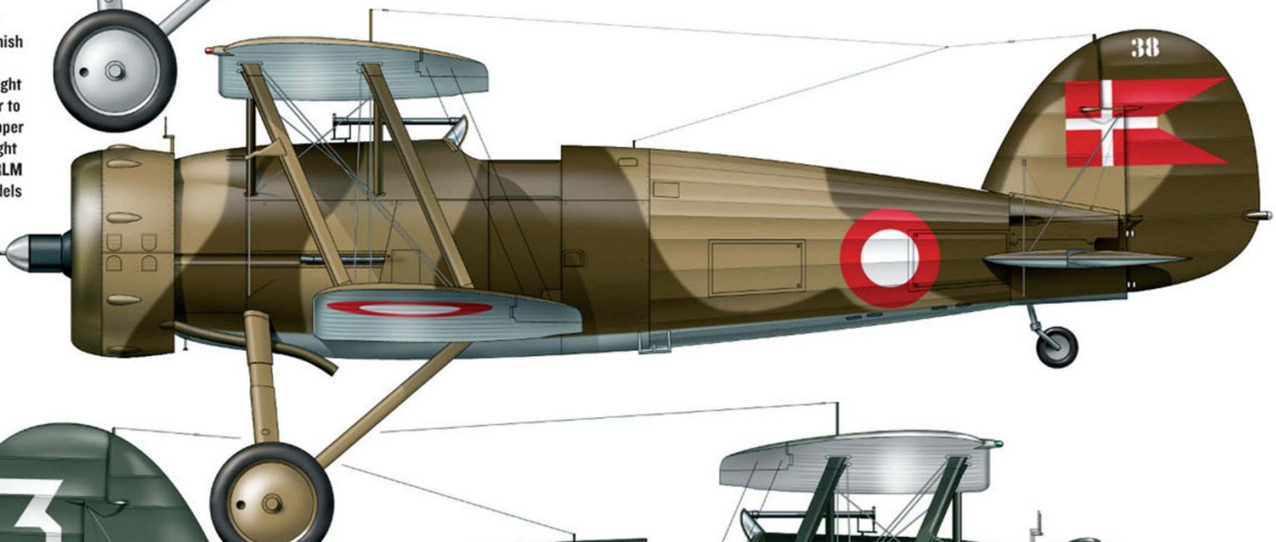
PROFILES 1:48 Scale

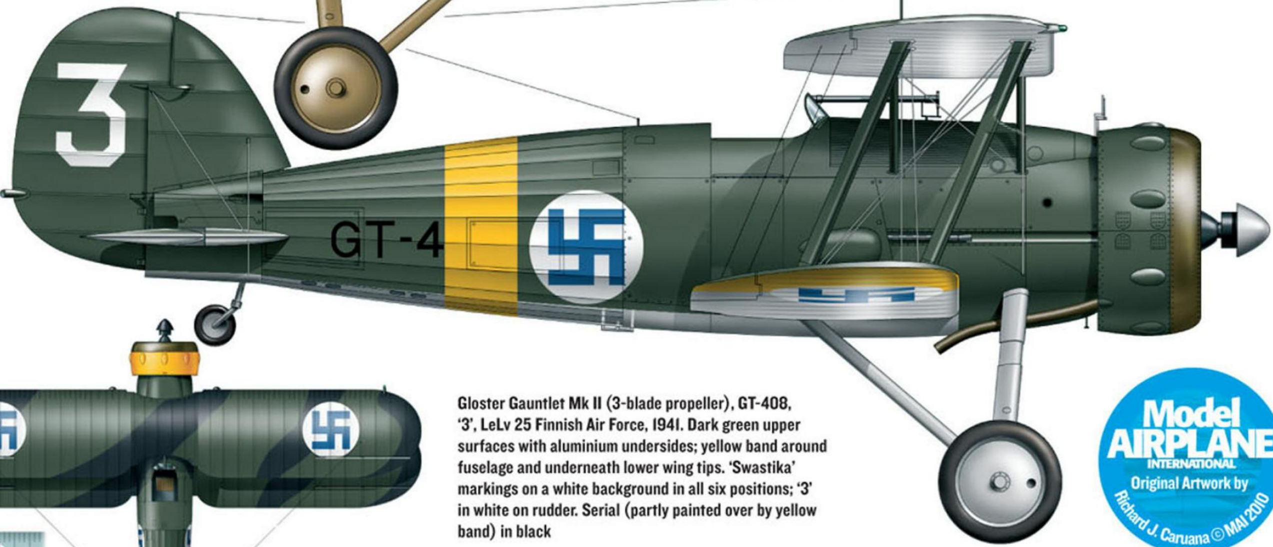




Danish-built IIJ (Gauntlet), J-37, Danish Air Force. Aluminium overall all fabric areas, with anodised aluminium metal panels. Roundels in six positions; J-37 in black on fuselage with J.37 in small digits on rear undercarriage strut

Right: Danish-built IIJ (Gauntlet), No.38, Danish Air Force. Dark Brown (similar to RLM 81), Light Greyish Brown (similar to Panzer *Dunkelgelb*) upper surface colour with Light Blue Grey (similar to RLM 76) undersides. Roundels in six position with the red/white flag on fin/rudder; white '38' high above fin





Gloster Gauntlet Mk II (3-blade propeller), GT-408, '3', LeLv 25 Finnish Air Force, 1941. Dark green upper surfaces with aluminium undersides; yellow band around fuselage and underneath lower wing tips. 'Swastika' markings on a white background in all six positions; '3' in white on rudder. Serial (partly painted over by yellow band) in black

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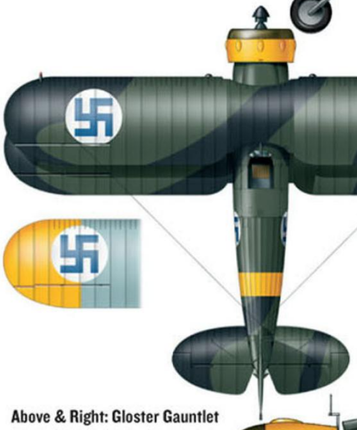
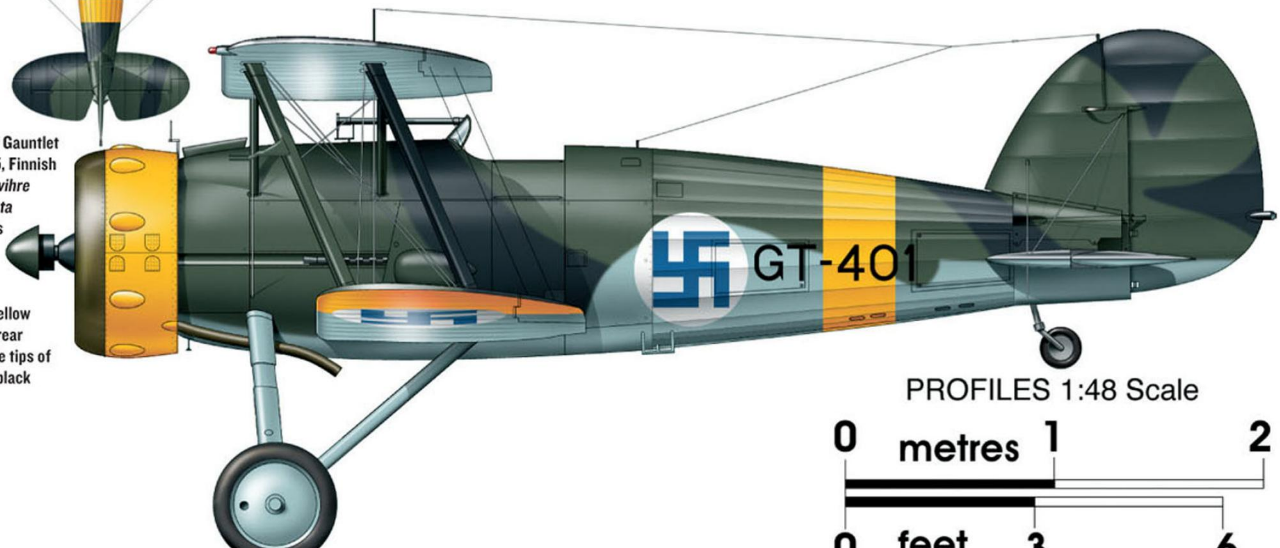


Above & Right: Gloster Gauntlet Mk II, GT-401, T-LLv 35, Finnish Air Force, 1942. *Oliivinvihre* (Olive Green) and *Musta* (Black) upper surfaces with *Vaaleansininen* (Light Blue) undersides. National markings in six positions; yellow cowling, band around rear fuselage and underside tips of lower wings. Serial in black



PROFILES 1:48 Scale

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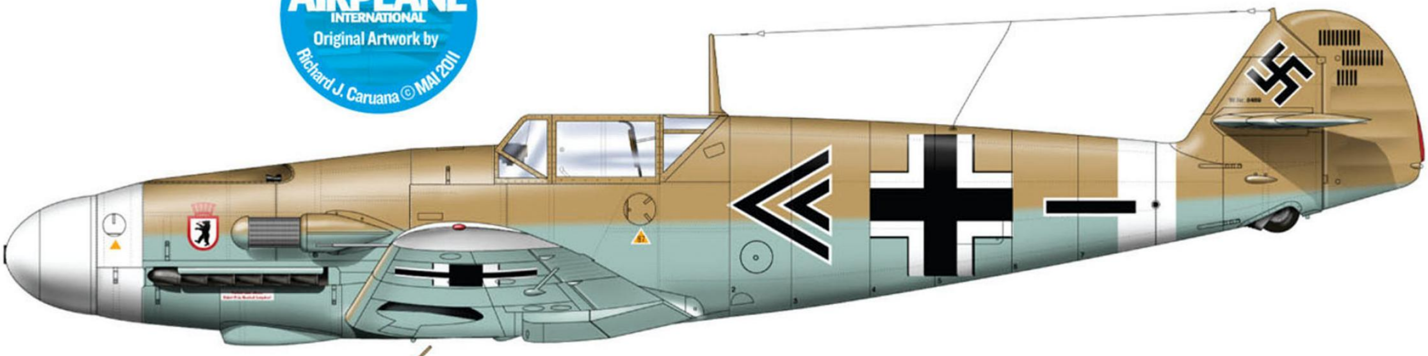
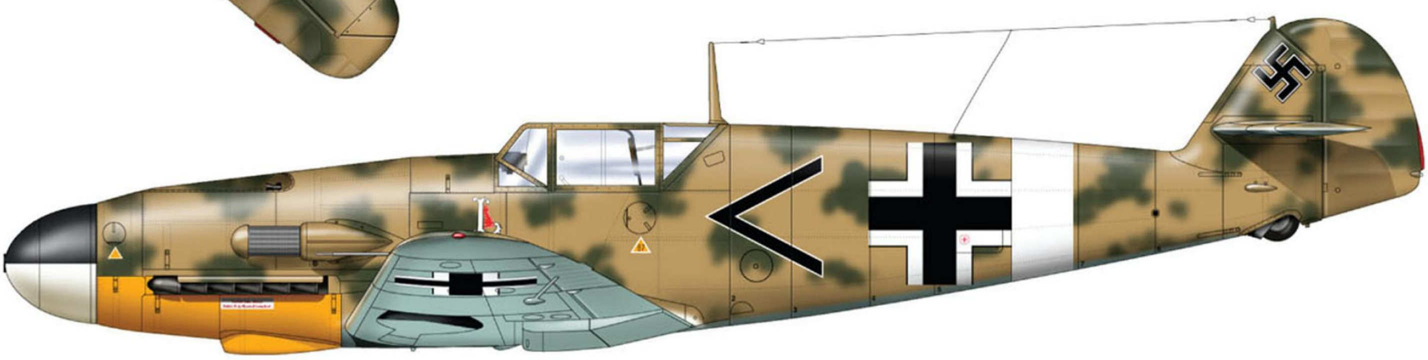
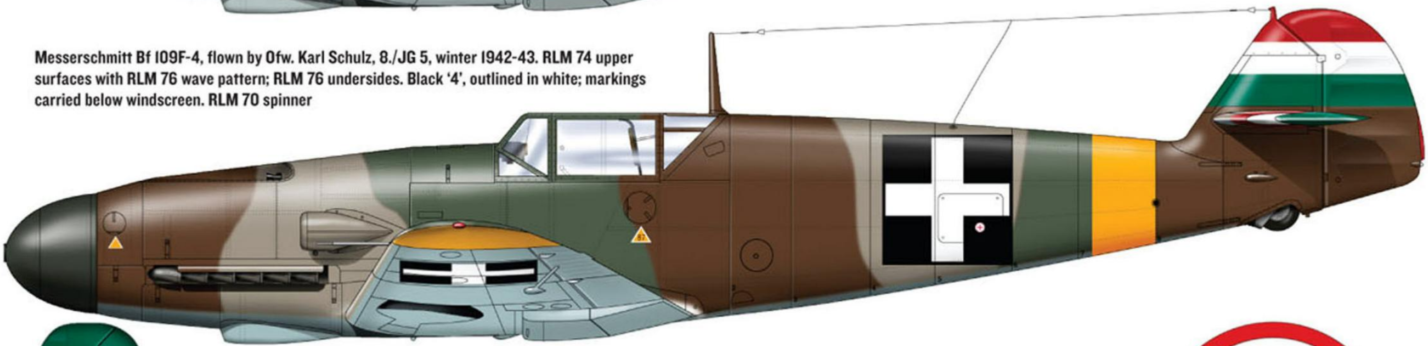


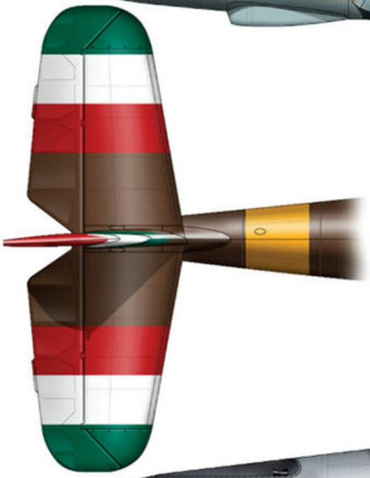
Above: Messerschmitt Bf 109F-4, W/Nr. 8469, flown by Hauptmann Wolfgang Lippert, Gruppenkommandeur II./JG 27, ain El Gazala (Libya), autumn 1941. RLM 78 upper surfaces with RLM 79 underside; white nose, wingtips and rear fuselage band. Double chevron and horizontal bar in black, outlined in white; 25 victories on rudder

Above & Below: Messerschmitt Bf 109F-4/Trop, flown by Lt Heinz-Edgar Berres, Gruppen Adjutant, I./JG 77, Matmata (Tunisia), early 1943. RLM 79 upper surfaces with RLM 80 mottling; RLM 78 undersides. Black/white spinner, black chevron outlined in white; Gelb 04 underside of engine cowling. White rear fuselage band; unit badge below windscreen



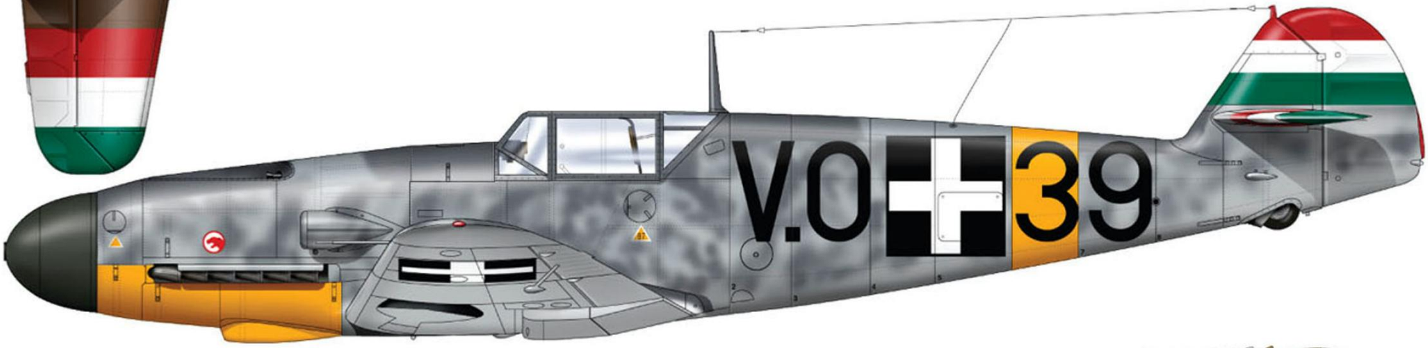
Messerschmitt Bf 109F-4, flown by Ofw. Karl Schulz, 8./JG 5, winter 1942-43. RLM 74 upper surfaces with RLM 76 wave pattern; RLM 76 undersides. Black '4', outlined in white; markings carried below windscreen. RLM 70 spinner



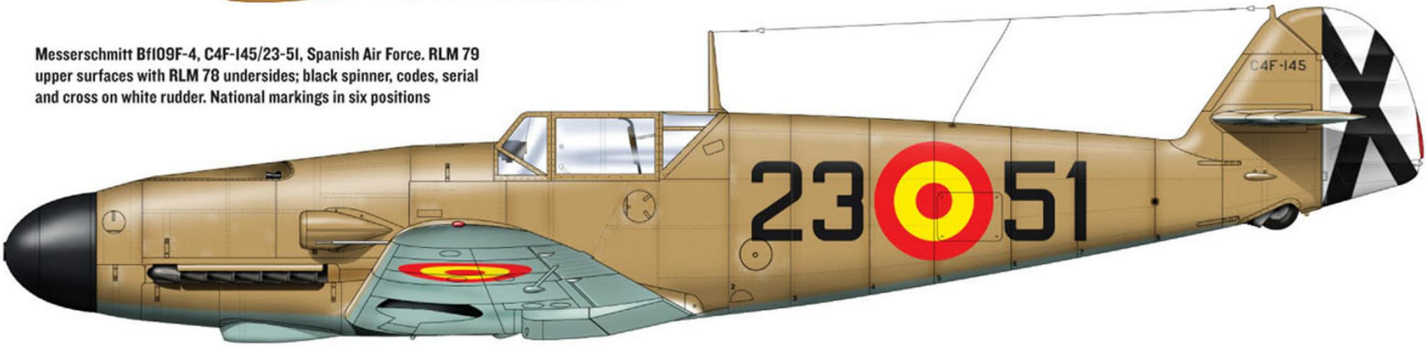


Above: Messerschmitt Bf 109F-4, Hungarian Air Force in an experimental finish. RLM 61/62/63 upper surfaces with RLM 65 undersides; national markings in six positions. Gelb 04 underside of wing tips and rear fuselage band; red/white/green bands across vertical and horizontal tail surfaces (see scrap view at left). Spinner in RLM 70

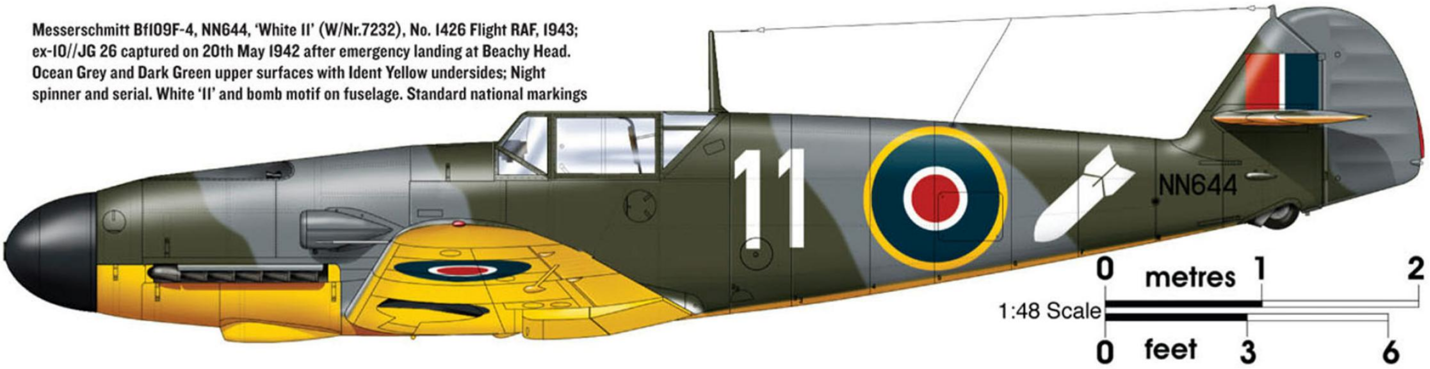
Below: Messerschmitt Bf 109F-4, V.0+39, 101/AA.V.Szd, Hungarian Air Force. RLM 74/75 upper surfaces with RLM 65 undersides; Gelb 04 underside of engine cowling and rear fuselage band. Black codes, RLM 70 spinner. Red/white/green stripes across vertical and horizontal tail surfaces. Unit badge on nose



Messerschmitt Bf109F-4, C4F-145/23-51, Spanish Air Force. RLM 79 upper surfaces with RLM 78 undersides; black spinner, codes, serial and cross on white rudder. National markings in six positions

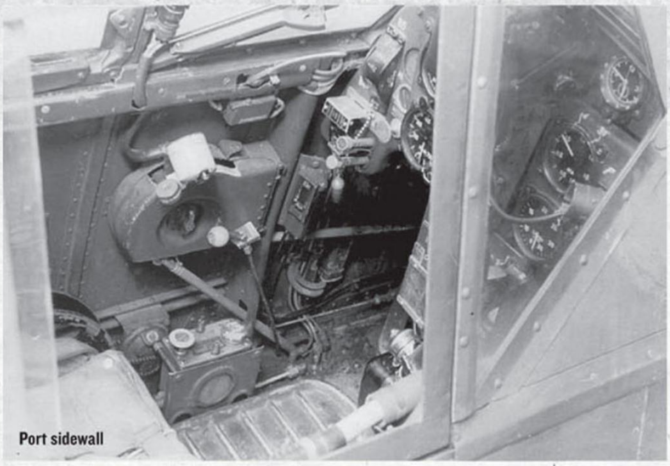


Messerschmitt Bf109F-4, NN644, 'White 11' (W/Nr.7232), No. 1426 Flight RAF, 1943; ex-10//JG 26 captured on 20th May 1942 after emergency landing at Beachy Head. Ocean Grey and Dark Green upper surfaces with Ident Yellow undersides; Night spinner and serial. White '11' and bomb motif on fuselage. Standard national markings

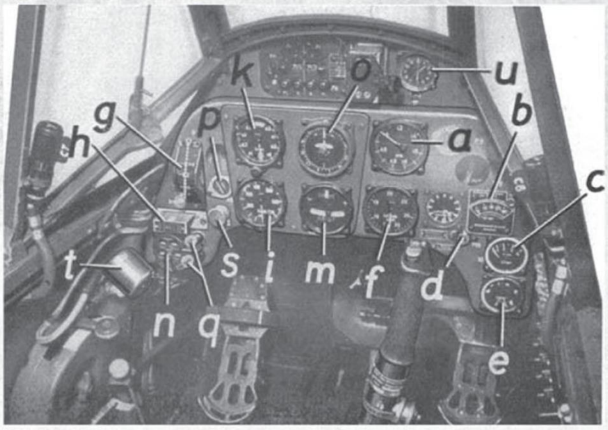


Reference Material

Our thanks to Przemyslaw Skulski for supplying the below images

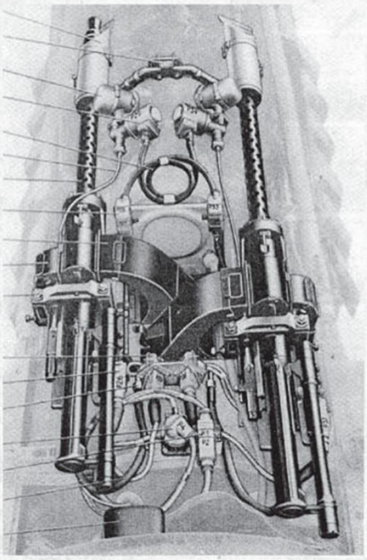


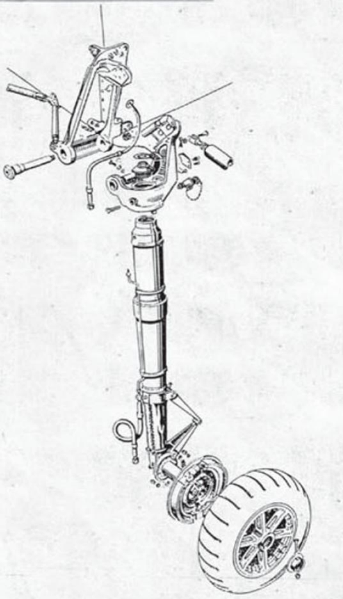
Port sidewall

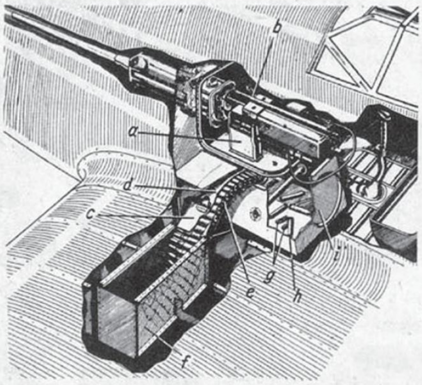


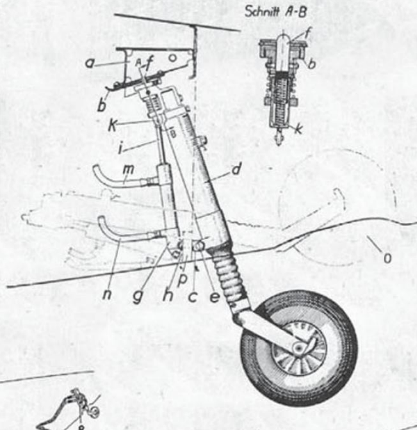
Instrument panel

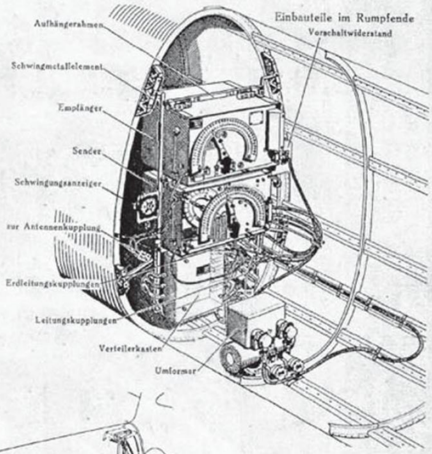
Starboard sidewall with instrument panel and gunsight visible

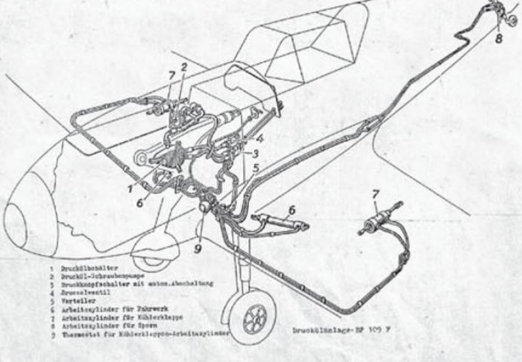


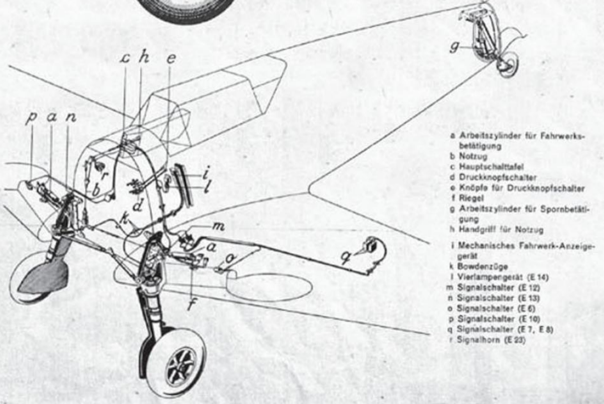












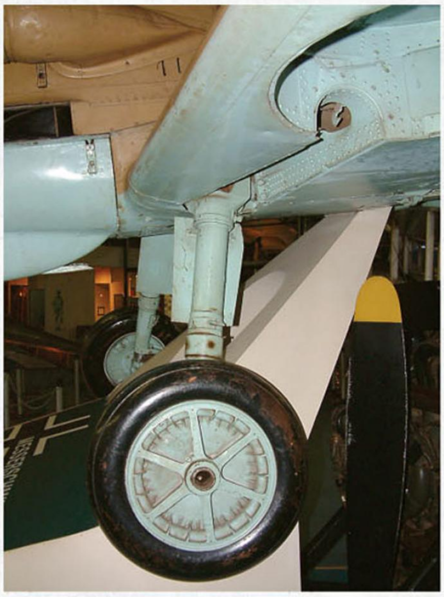
Reference Material

The below photographs show the Bf 109F-4/trop on display in the museum at Saxonwold, South Africa and are all © Deon Rowles

Nice view of the port nose cowl showing the tropical intake

This shot of the starboard side of the nose shows the various intakes and cowling clips

A view up into the starboard wheel well, without the canvas covers usually seen in this area



The port oleo and wheel, although the oleo is fully compressed

This shot gives you a good idea of the spinner profile

Here you can see the propeller blade cut-outs in the spinner, as well as the matrix style in the ventral radiator

Note the position of the intake scoop and the prominent seams on the exhaust stacks

A useful look up under the tail as well up into the tailwheel well - usually this has a canvas cover protecting the bay from sand

DRAGON KILLER

Kawasaki Ki-45 Toryu of the 53rd Sentai in typical camouflage and wearing the 'home defence' bands around the wings, 1945 (R.J. Caruana Archives)

It is well known how the appearance of the A6M 'Zero' took the Allies by surprise when it was met in combat for the first time. Up to the time of the infamous raid on Pearl Harbor Japan's national aircraft production and standards had been largely ignored notwithstanding that the latest and most modern foreign military aircraft had been acquired in small quantities for evaluation purposes as far back as the early 1930s. Such evaluations enabled the Japanese to keep an eye open for the latest and most sophisticated airframe and engine developments from the West.

By the mid '30s the appearance of a series of twin-engined fighters designed specifically for long-range operations, most of which also being fitted with heavy offensive armament, could not be ignored. France, in particular, was developing a series of such fighters, Germany's Messerschmitt Bf 110 was in its infancy and the Fokker G.I was emerging from The Netherlands; one particular exception was Britain where most fighter design was concentrated on short range, local defence fighters such as the Hurricane and Spitfire. With its expansionist ambitions Japan knew very well that long-range, twin-engine fighters would be an essential part of its arsenal and in March 1937 the Imperial Japanese Army (IJA) issued its first specification for the design and development of such an aircraft. A wide latitude of interpretation was allowed by the Research Institute at Tachikawa to those manufacturers selected to participate in the project, which consisted of Kawasaki Kokuki K.K. (Kawasaki Aircraft Co. Ltd), Mitsubishi Jukogyo K.K. (Mitsubishi Heavy Industries Co. Ltd), and Nakajima Hikoki K.K. (Nakajima Aircraft Co. Ltd). Mitsubishi's Ki-39 and Nakajima's Ki-37 were soon considered unsuitable as both companies showed that they did not possess the necessary experience in their respective design teams. Isamu Imashi, heading Kawasaki's design team, based his Ki-38 around an aircraft powered by a pair of 12-cylinder liquid-cooled engines. By summer 1937 rapid progress had been registered and a full-scale mock-up was nearing completion when in October the IJA decided to cancel the project.

The main reason for this cancellation was to provide Kawasaki with a more detailed specification in a bid to quell differing opinions within the ranks of the Japanese Army Air Force (JAAF) as to the new fighter's performance requirements. Work was ordered to commence in December 1937 on the Ki-45, aiming for a maximum speed of 335.5mph (540 km/h) at 11,480ft (3,500m), an operating altitude of between 6,560ft (2,000m) and 16,405ft (5,000m) and an endurance of four hours and forty minutes at a cruising speed of 217mph (350km/h) plus thirty minutes combat time. Two 9-cylinder Nakajima Ha-20b radials were to be fitted and armament had to consist of two forward firing guns and one hand-held gun in the rear cockpit.

Chief Engineer of the project was now Takeo Doi with Tsuyoshi Nemoto as deputy, and work began immediately in January 1938 at Kawasaki's Gifu establishment. It was to be the beginning of a long gestation period for Japan's new heavy fighter, as the project was to require more time to develop and put into production that any other Japanese fighter during World War II.

It was early 1939 when the first Army Experimental Ki-45 (cn.4501) two-seat, twin-engine fighter was rolled out for a brief period of ground running tests in anticipation of its first flight. The Nakajima Ha-20b engines, licence-built versions of the Bristol Mercury, rated at 820hp at 12,00ft (3,900m) proved insufficient for the weight of the airframe and initial flight tests results were far from the IJA's expectations. Refinements to the nacelles and addition of airscrew spinners did little to improve performance on the second prototype (cn.4502). Armament fitted consisted of a pair of 7.7mm Type 89 machine guns in the upper fuselage nose and one 20mm Ho-3 cannon (based on the Hotchkis anti-aircraft Type 97 cannon) with 127 rounds mounted ventrally within a groove in the nose, offset to starboard.

Little improvement had been registered by the end of 1939 with the three prototypes of the test programme, where maximum speed was still far from acceptable at 298mph (480km/h) at 13,125ft (4,000m). The rate at which the new fighter had been designed and developed brought to light the lack of experience Japanese manufacturers had with high speed aircraft as prototypes suffered a series of teething troubles. The hand-operated main wheel undercarriage retraction mechanism, prone to frequent breakage, was replaced by an electrical system while counter rotating props on the engine were considered in a bid to eliminate nacelle stall and drag, something that was never realised.

Early in 1940 the final three prototypes were nearing completion but were still without engines, and in April the IJA ordered the installation of Nakajima Ha-25 engines in one of these unfinished airframes. The Ha-25 was rated at 1,050hp at 8,340ft and offered lower frontal drag being of a smaller diameter. These engines were fitted for the first time on the seventh prototype (cn.4507) and on the first flight in July 1940 it was severely damaged due to an emergency landing after one of the cowling flaps was torn off. It was back in the air a month later, joining cn.4504, 4505, 4506, 4508 and 4509 that had all been fitted with the higher-rated engines.

Speed had reached an acceptable level and nacelle stall and drag had been corrected in the Ki-45 KAI (Kaiso – Modified) as the revised version was designated. Meanwhile a complete redesign was under way to improve performance and simplify the airframe for quantity production. Among the main differences was the option for a simpler, straight-edged wing platform in place of the original elliptical shape, the engine cowlings were hung lower on the wing, the fuselage was slimmer and the tail unit completely redesigned. Armament requirements were also revised, with the nose guns being replaced by a

pair of 12.7mm Ho103 machine guns and a 7.92mm Type 98 (Japanese licence version of the Mauser MG 15) hand-operate machine gun for the rear gunner; the ventral Ho3 20mm cannon remained unchanged.
First prototype of the Ki-45 KAI was rolled out in August 1941 with flight trials beginning in September; by the end of the year the IJA accepted the new Army Type 2 Model A two-seat fighter that was named 'Toryu' (Dragon Killer) and ordered production to begin immediately at both the Gifu plant where the aircraft had been developed and at Kawasaki's other plant at Akashi. The latter manufacturing establishment was to produce 80 percent of the 1,690 examples built, with the initial operational version designated Ki-45 KAI-Ko reaching a respectable maximum speed of 340mph at 20,000ft (540km/h at 6,000m); it had a range of 1,250 miles (2,000km). A Ki-45 in knocked-down form was shipped from the Gifu plant in September 1942 to Akashi from where the latter plant delivered its first aircraft before the end of the year. By summer 1943 the Akashi plant had surpassed Kawasaki's main plant in rate of production and the Gifu production of the Ki-45 was wound down in September of that year.
Initially the Ki-45 was to be used operationally as a long-range bomber escort. In June 1942, the 84th Independent Chutai encountered the P-40 for the first time, flown by the Flying Tigers over Guilin. It was immediately apparent that the Japanese twin-engine fighter was no match for the Kittyhawk; however its heavy armament was ideal to engage B-17 and B-24 United States Army Air Force (USAAF) bombers. The Ki-45 proved to be extremely manoeuvrable and it could engage USAAF Lockheed P-38 Lightnings with ease. Armour protection for crew and fire-resistant fuel tanks were unusual 'extras' for a Japanese warplane and such features eventually won the admiration of its crews after a difficult gestation period when it was generally unliked at first.
Meanwhile the Ki-45 began to appear in various theatres and apart from its original role of interceptor it was engaged in ground attack, anti-shipping strikes and fleet escort duties. It was in this last role that it was used to great advantage in New Guinea. By that time Kawsaki had continued to improve the Ki-45 and an upgraded version was produced where the ventral 20mm cannon was replaced by a 37mm Type 94 cannon; nose guns and the rear gunner's machine gun remained unchanged; it was designated Ki-45 KAI-Otsu. This version had been planned to counter B-17 Flying Fortress bombers. Notwithstanding its enormous firepower the 37mm cannon had to be reloaded by hand, meaning that two rounds a minutes was the maximum that could be fired.
At the end of March 1942 the 6th Sentai received six Ki-45s which were scrambled to oppose the first USAAF raid against the Japanese homeland by Doolittle's B-25 Mitchells on 18 April. In typical interceptor style the Ki-45s climbed high, which meant that they missed the raiders that came in at very low level. As the Toryus presented an unusual sight they were fired upon by 'friendly' anti-aircraft fire and had to seek the protection of Ki-27 Nates for land safely. In New Guinea the Ki-45s began to oppose Consolidated B-24 Liberators of the 5th Air Force (AF) and soon the Toryu was being employed as a night fighter.
A major redesign of the nose area appeared with the introduction of the Ki-45 KAI-Hei where the 37mm Ho203 cannon was fitted centrally in an extended nose, the ventral gun reverted to the original 20mm Ho2 cannon while the hand-held gun in the rear cockpit remained as before. By June 1944 the 20th AF began to employ the mighty Boeing B-29 Superfortress against the Japanese home islands and Ki-45s opposed these bombers with considerable success. This was no mean task considering that usually B-29s flew at 32,800ft (10,000m). Kawasaki's fighter proved to be a very versatile aircraft and other versions followed. The Ki-45 KAI-Tei did away with the rear firing gun and the gunner's position was faired over. A single 40mm Ho301 cannon in the ventral position was the sole armament of the Ki-45 KAI-Bo. Most of the Ki-45s from these stripped down versions, flying with reduced fuel, minimum ordnance and removal of all unnecessary equipment (including radio at times) were widely employed by Kamikaze units in ramming attacks. On 2 April 1945 two Ki-45s rammed the USS Dickerson off Okinawa, the first clipping the stack from astern and hitting the bridge while the second hit the foredeck causing heavy damage. After the ship's survivors had been rescued the ship had to be scuttled.

USAF personnel examine an abandoned Ki-45 previously belonging to the 27th Sentai late in 1944 on an airfield in the Philippines. The fuselage appears to have suffered severe battle damage, although it could also have been inflicted by retreating Japanese Forces (USAF)

A field modification, where two 12.7mm machine guns were installed in place of the upper fuselage fuel tank to fire obliquely upwards, was to become a standard fit on later Ki-45 models. The first to appear so armed was the Ki-45 KAI-Ko-Tei where nose armament consisted of it 'Ko's' original pair of 12.7mm Ho103 machine guns, another similar pair fitted to fire obliquely upward fitted in place of the upper fuselage fuel tank while the rear gunner retained his 7.92mm Type 98 machine gun. The same treatment was applied to the Ki-45 KAI-Hei which in its 'Tei' subversion had the pair of 12.7mm oblique-firing machine guns fitted, although sometimes the rear firing hand-held gun was removed. Ki-45s fitted with such upward-firing guns were used effectively in the night-interceptor role. An attempt was made to equip Toryu night fighters with centimetric radar to enhance their night fighter capabilities but production difficulties coupled with lack of time to test such an arrangement meant that such an arrangement failed to materialise.
By spring 1945 USAAF raids could be launched from islands such as Iwo Jima, much closer to Japan's mainland, and bombers could be accompanied by formidable escort fighters such as the P-51 Mustang and carrier-borne fighters. This virtually brought the Ki-45's career to a close and although the type was in the process of being replaced by the much improved Ki-102 whose production however only reached a total of 238, the Toryu was compelled to soldier on till the end of the war.
The only known surviving Ki-45 is a KAI-Hei that was one of some 145 Japanese aircraft shipped to the US aboard USS Barnes for evaluation after the end of World War II. Following an overhail at Middletown Air Depot (Pennsylvania) it underwent a test programme with the USAAF at Wright Field (Ohio) and later at Naval Air Station Anacostia (Columbia) for the United States Navy (USN). In June 1946 it was delivered to the Smithsonian Institution's National Air Museum. Today only the fuselage survives at the Steven F. Udvar-Hazy Center, National Air and Space Museum, Washington DC.

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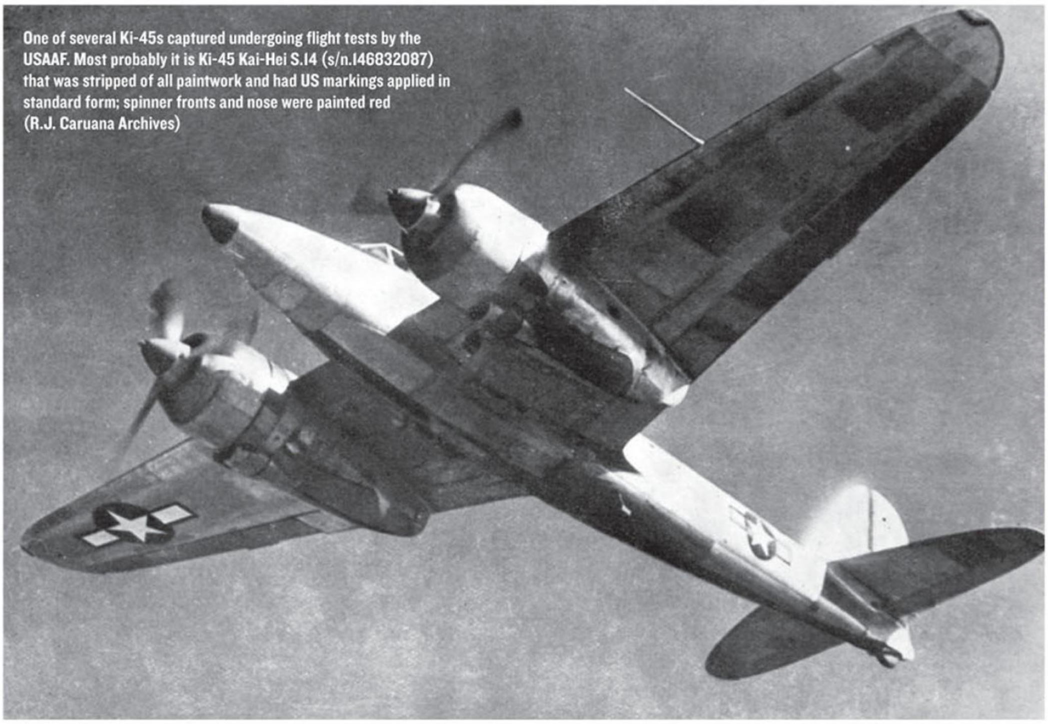

One of several Ki-45s captured undergoing flight tests by the USAAF. Most probably it is Ki-45 Kai-Hei S.14 (s/n.146832087) that was stripped of all paintwork and had US markings applied in standard form; spinner fronts and nose were painted red (R.J. Caruana Archives)

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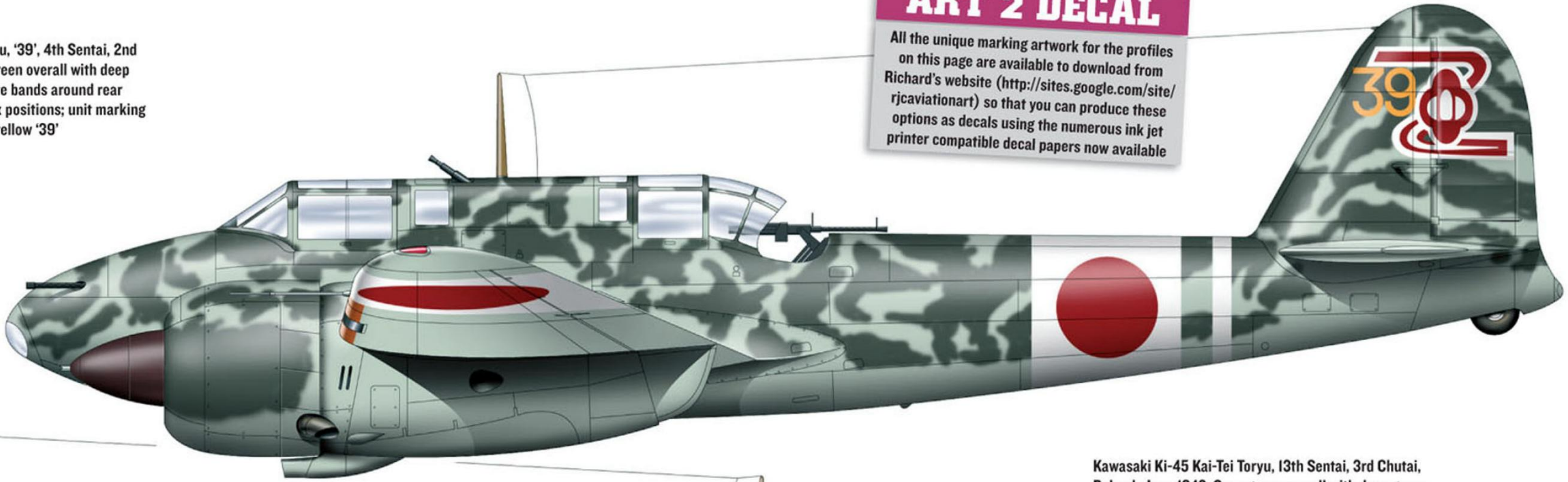
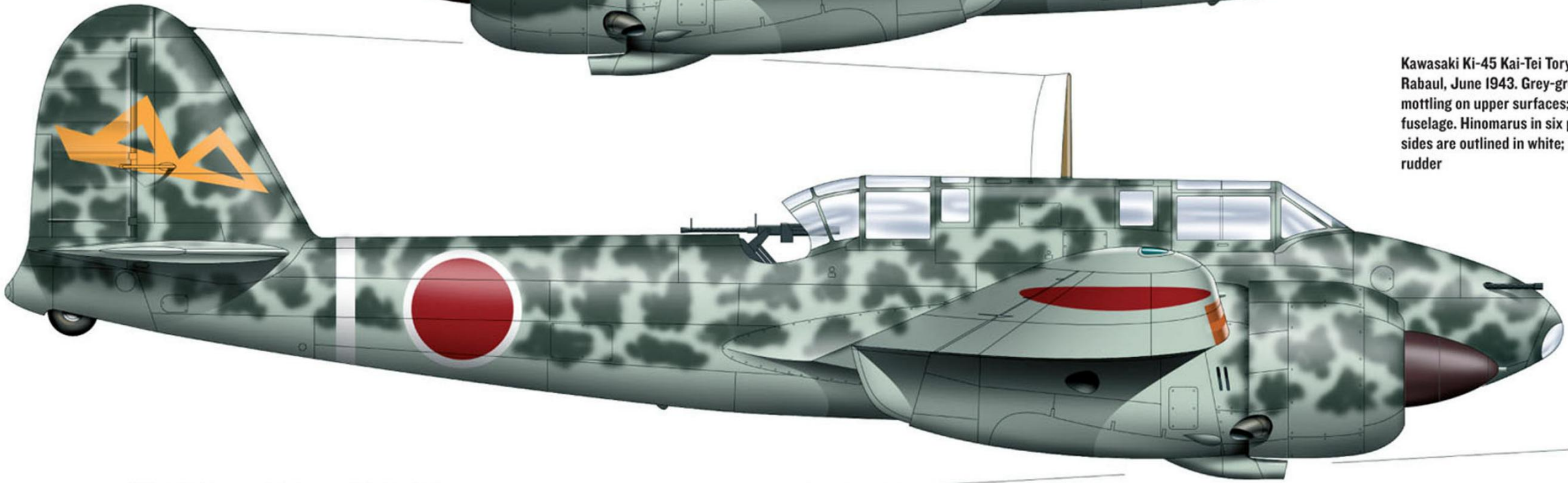
Kawasaki Ki-45 Kai-Tei (Type I) Toryu, '39', 4th Sentai, 2nd Chutai, Ozuki Air Base, 1944. Grey-green overall with deep green mottle on upper surfaces; white bands around rear fuselage and wings. Hinomarus in six positions; unit marking on fin/rudder in white and red, with yellow '39'



Kawasaki Ki-45 Kai-Tei Toryu, 13th Sentai, 3rd Chutai, Rabaul, June 1943. Grey-green overall with deep green mottling on upper surfaces; white band around rear fuselage. Hinomarus in six positions, those on fuselage sides are outlined in white; unit motif in yellow on fin and rudder



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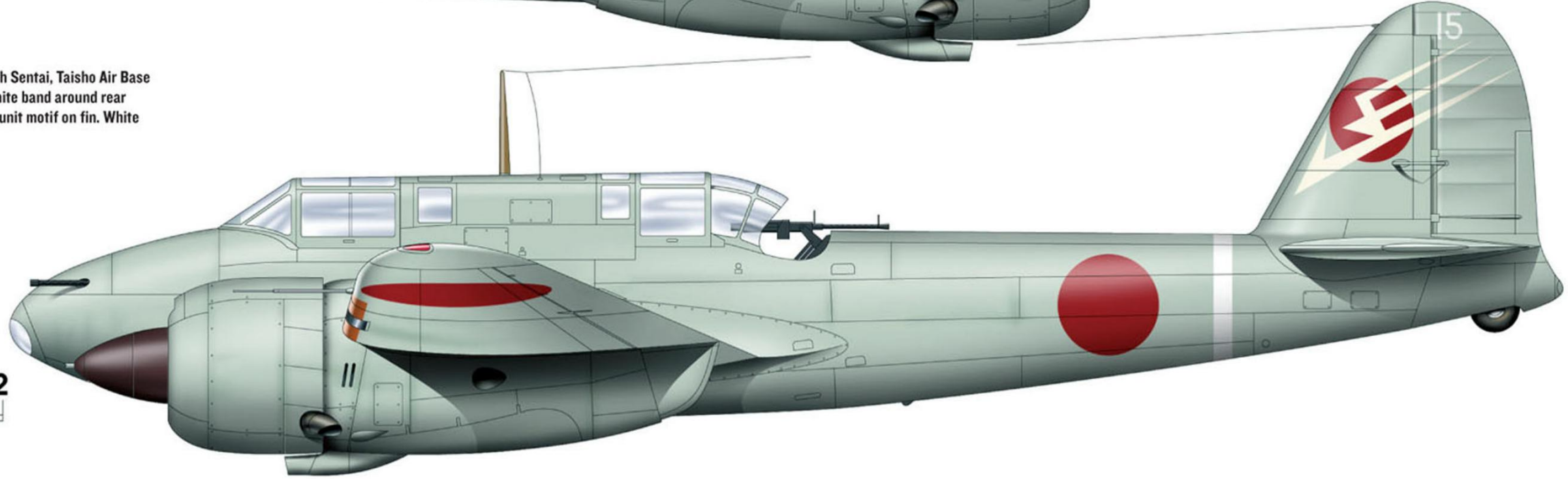
Kawasaki Ki-45 Kai-Ko Toryu, '15', 13th Sentai, Taisho Air Base (Japan), 1943. Grey-green overall; white band around rear fuselage. Hinomarus in six positions; unit motif on fin. White '15' on top of rudder

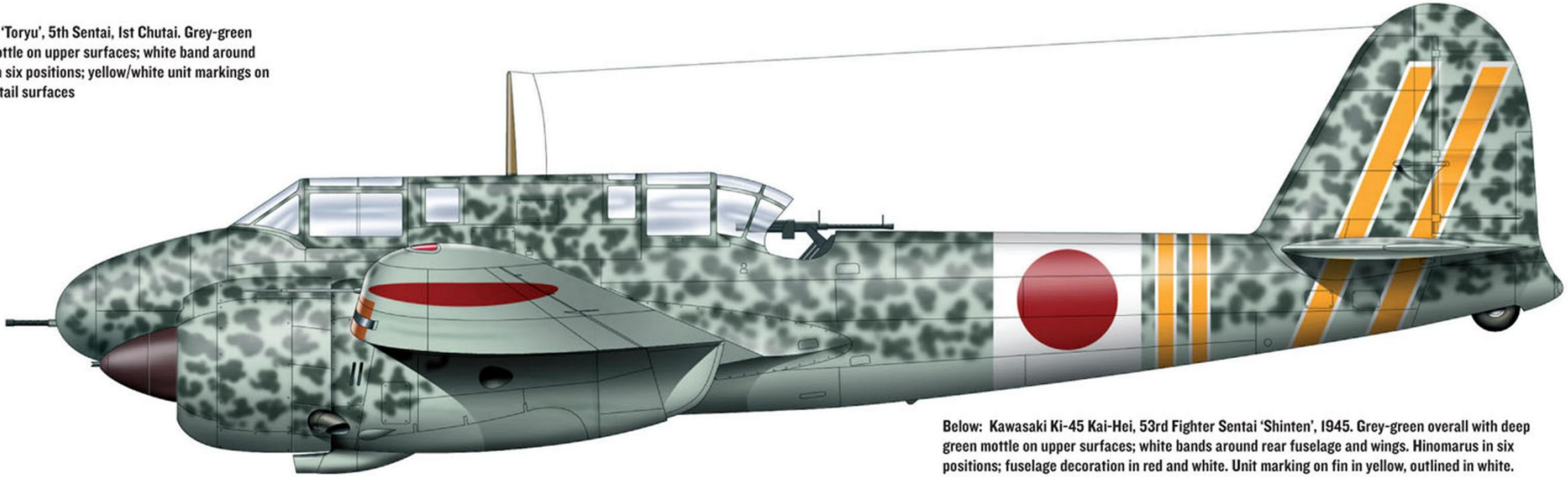


PROFILES 1:48 Scale

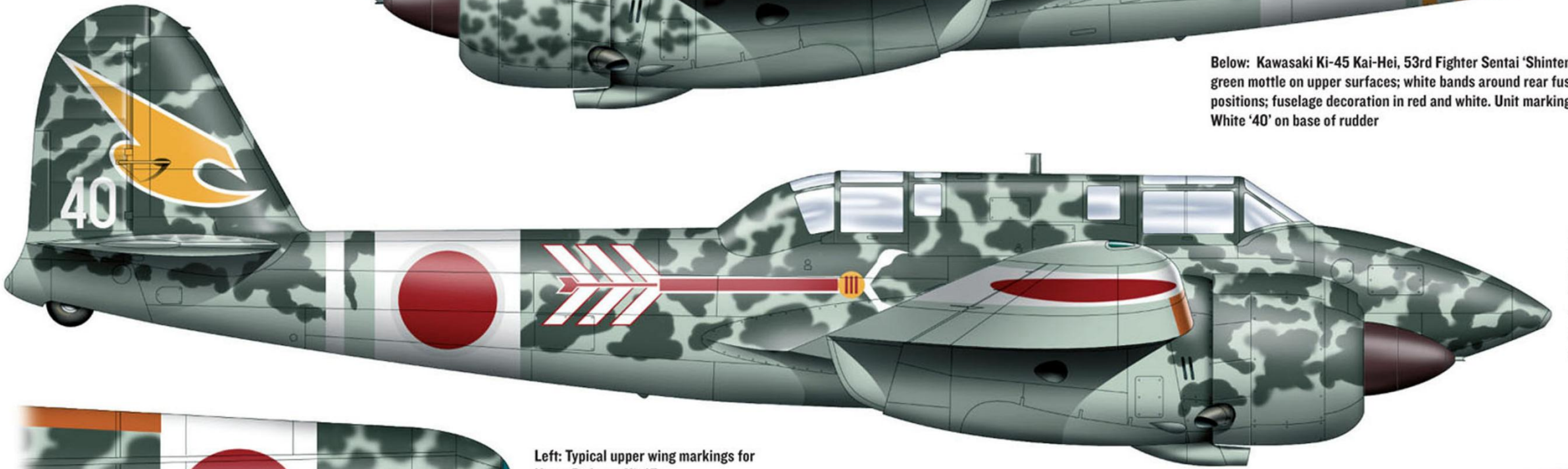
0 metres 1 2

0 feet 3 6

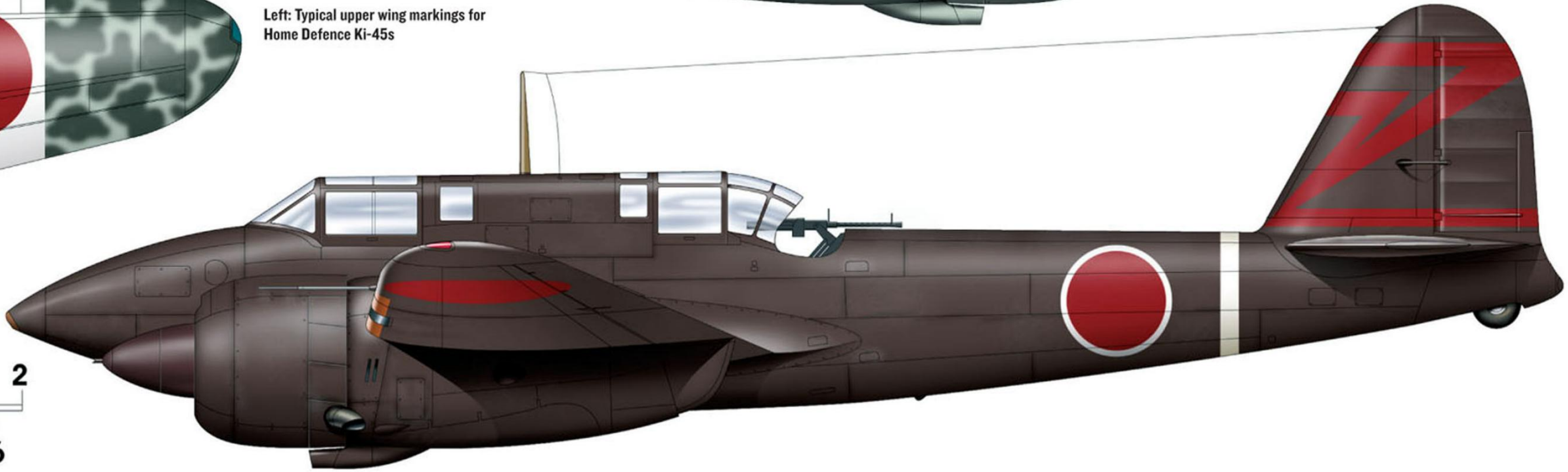
Kawasaki Ki-45 Kai-OTSU 'Toryu', 5th Sentai, Ist Chutai. Grey-green overall with deep green mottle on upper surfaces; white band around rear fuselage. Hinomaru in six positions; yellow/white unit markings on rear fuselage and vertical tail surfaces



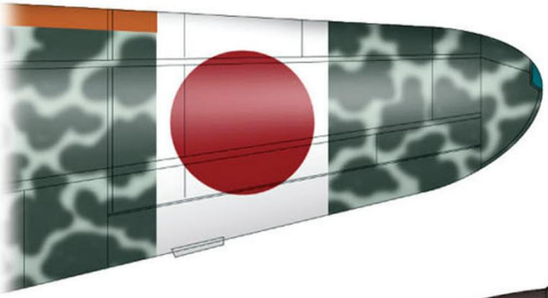
Below: Kawasaki Ki-45 Kai-Hei, 53rd Fighter Sentai 'Shinten', 1945. Grey-green overall with deep green mottle on upper surfaces; white bands around rear fuselage and wings. Hinomarus in six positions; fuselage decoration in red and white. Unit marking on fin in yellow, outlined in white. White '40' on base of rudder

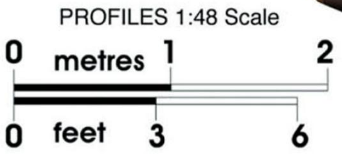


Bottom: Kawasaki Ki-45 Kai-Hei 'Toryu', 27th Sentai, 2nd Chutai. Deep Tan overall with white band around rear fuselage; Hinomarus in six positions, with the one on the fuselage outlined in white. Red unit marking on fin and rudder



Left: Typical upper wing markings for Home Defence Ki-45s





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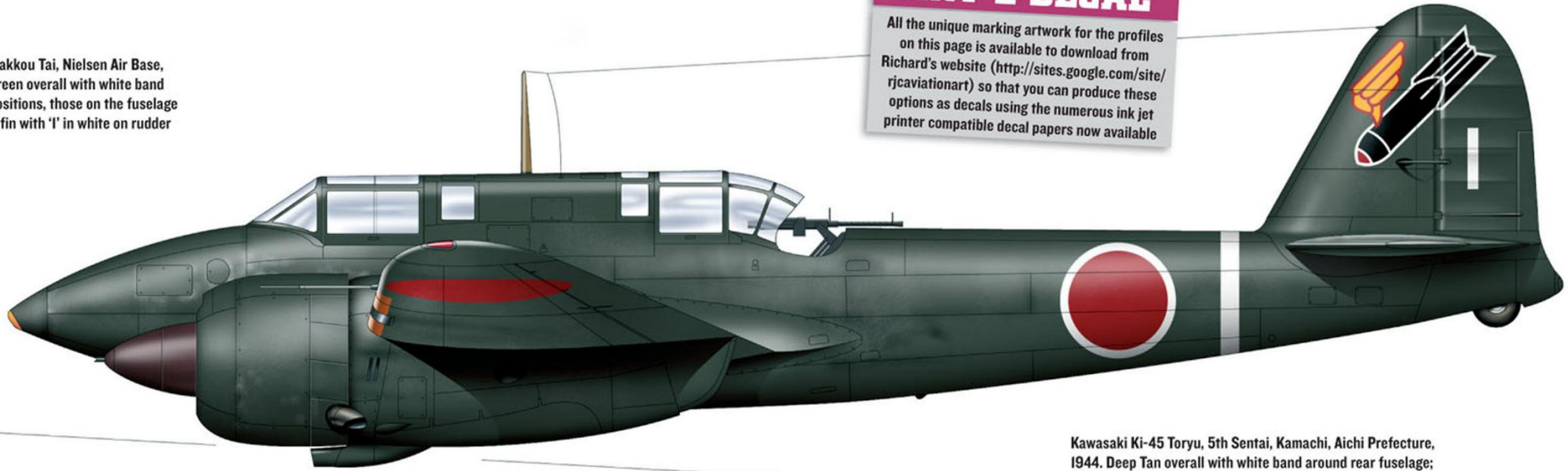
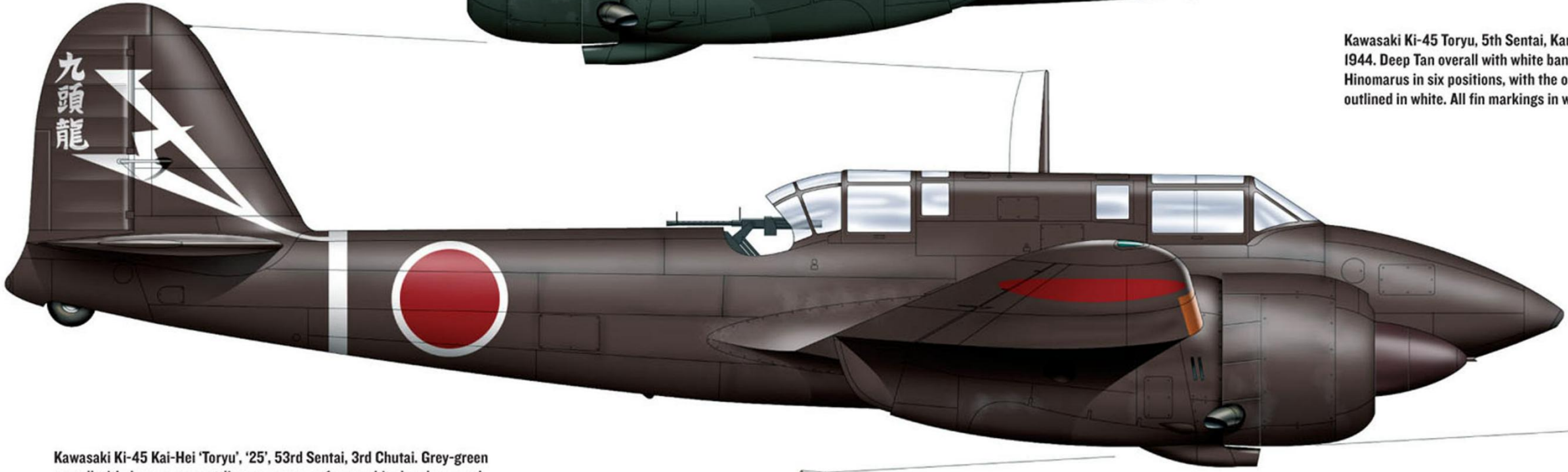
Kawasaki Ki-45 Kai-Hei Toryu, 8th Kakkou Tai, Nielsen Air Base, Philippines, December 1944. Deep Green overall with white band around fuselage; Hinomarus in six positions, those on the fuselage having a white outline. Unit motif on fin with 'I' in white on rudder



Kawasaki Ki-45 Toryu, 5th Sentai, Kamachi, Aichi Prefecture, 1944. Deep Tan overall with white band around rear fuselage; Hinomarus in six positions, with the one on the fuselage outlined in white. All fin markings in white



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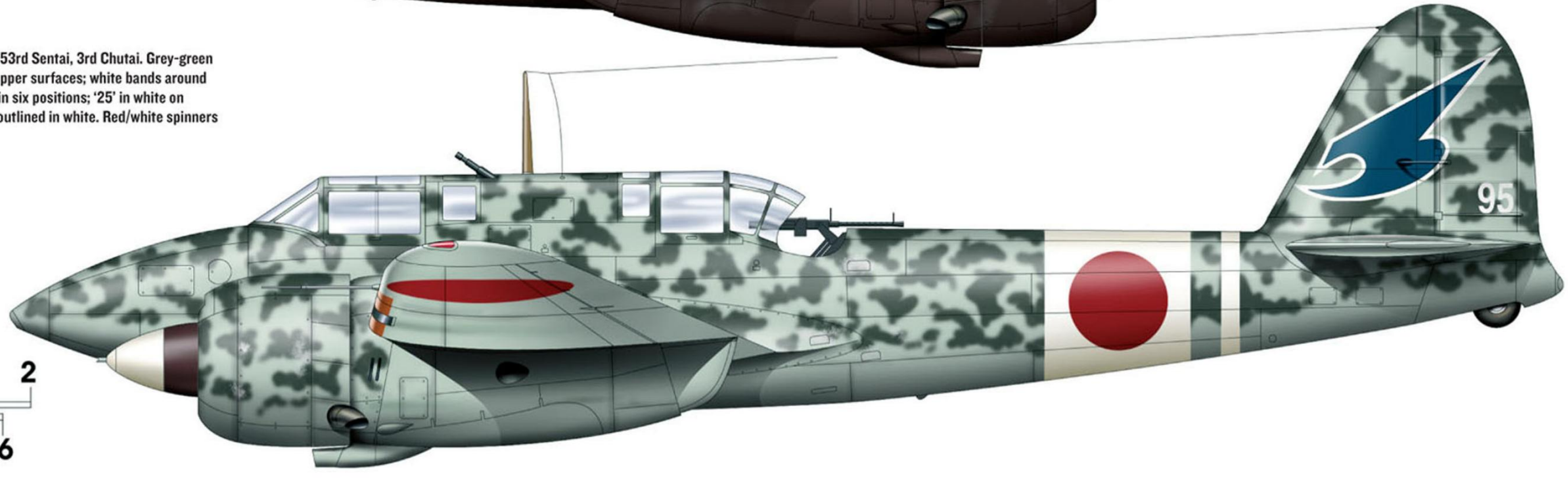
Kawasaki Ki-45 Kai-Hei 'Toryu', '25', 53rd Sentai, 3rd Chutai. Grey-green overall with deep green mottling on upper surfaces; white bands around rear fuselage and wings. Hinomarus in six positions; '25' in white on rudder, unit marking in yellow thinly outlined in white. Red/white spinners



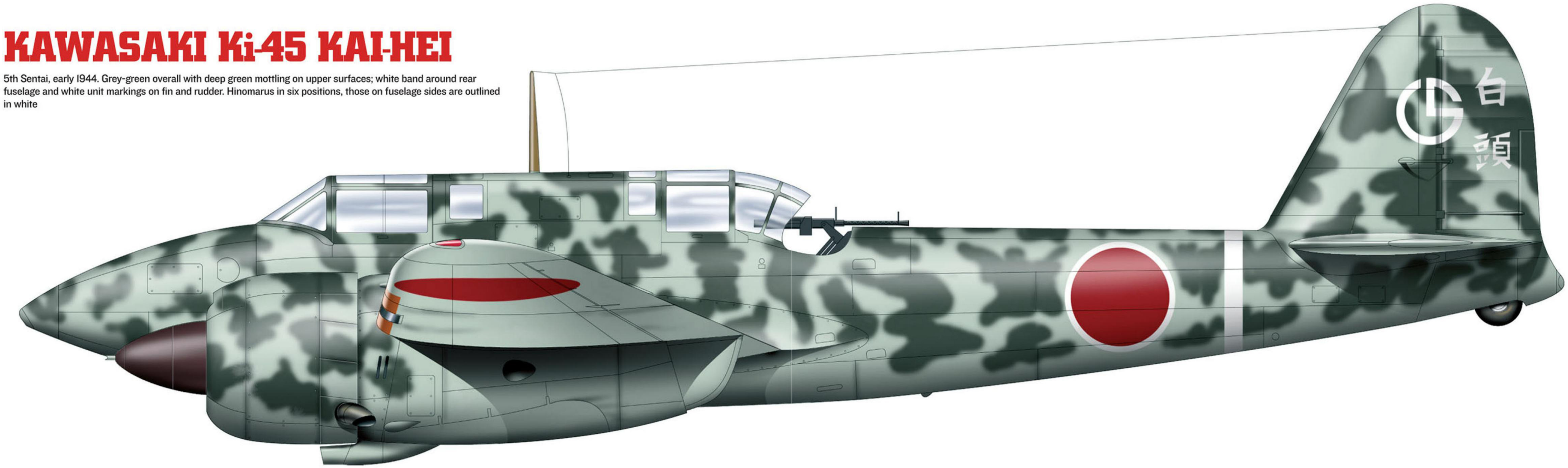
PROFILES 1:48 Scale

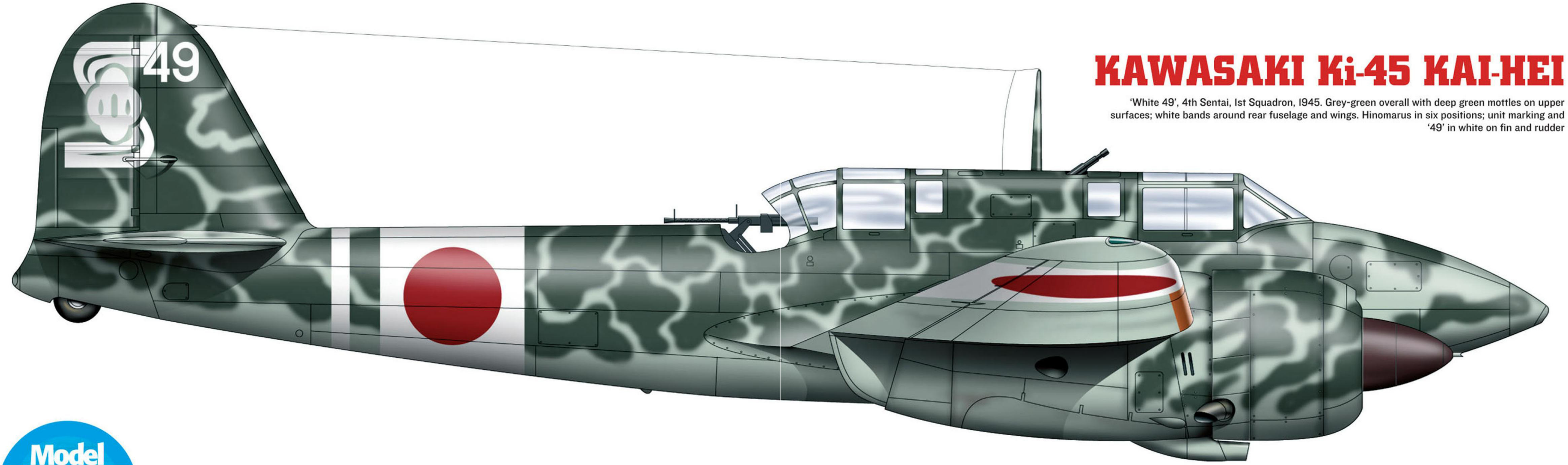
0 metres 1 2

0 feet 3 6

KAWASAKI Ki-45 KAI-HEI

5th Sentai, early 1944. Grey-green overall with deep green mottling on upper surfaces; white band around rear fuselage and white unit markings on fin and rudder. Hinomarus in six positions, those on fuselage sides are outlined in white





KAWASAKI Ki-45 KAI-HEI

'White 49', 4th Sentai, 1st Squadron, 1945. Grey-green overall with deep green mottles on upper surfaces; white bands around rear fuselage and wings. Hinomarus in six positions; unit marking and '49' in white on fin and rudder

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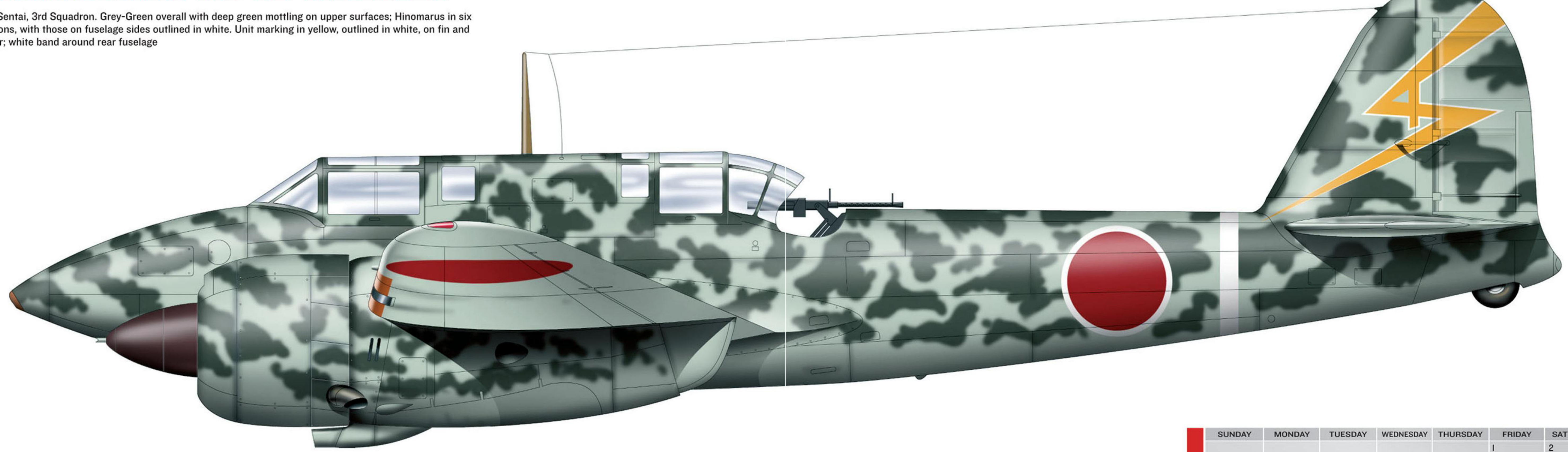
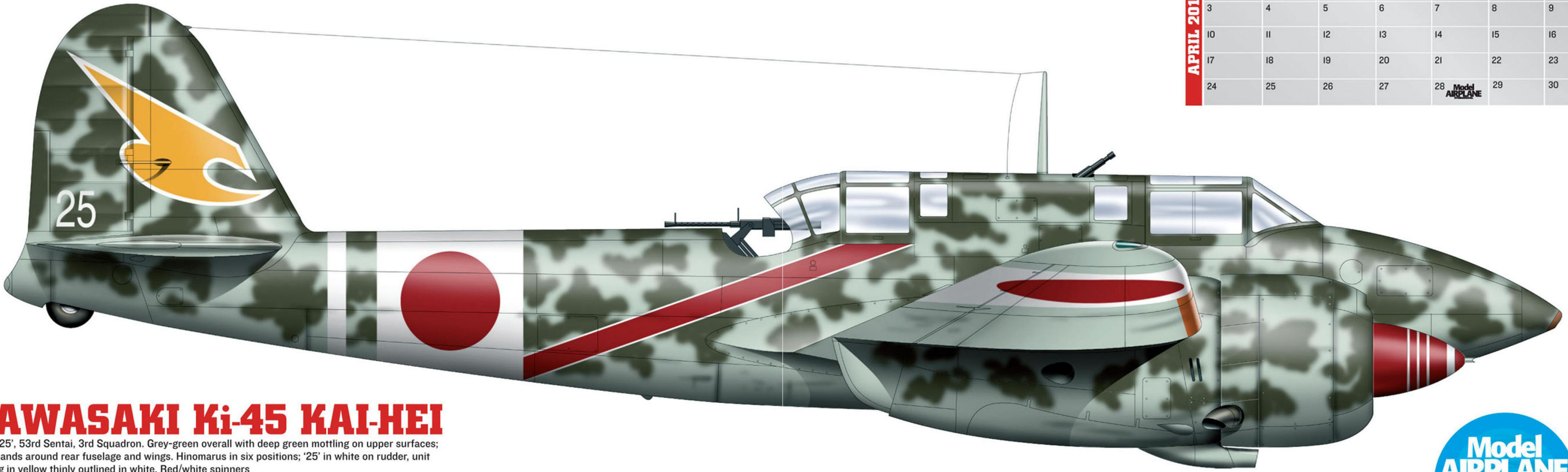
KAWASAKI Ki-45 KAI-HEI

45th Sentai, 3rd Squadron. Grey-Green overall with deep green mottling on upper surfaces; Hinomarus in six positions, with those on fuselage sides outlined in white. Unit marking in yellow, outlined in white, on fin and rudder; white band around rear fuselage



APRIL 2011

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30



KAWASAKI Ki-45 KAI-HEI

'White 25', 53rd Sentai, 3rd Squadron. Grey-green overall with deep green mottling on upper surfaces; white bands around rear fuselage and wings. Hinomarus in six positions; '25' in white on rudder, unit marking in yellow thinly outlined in white. Red/white spinners

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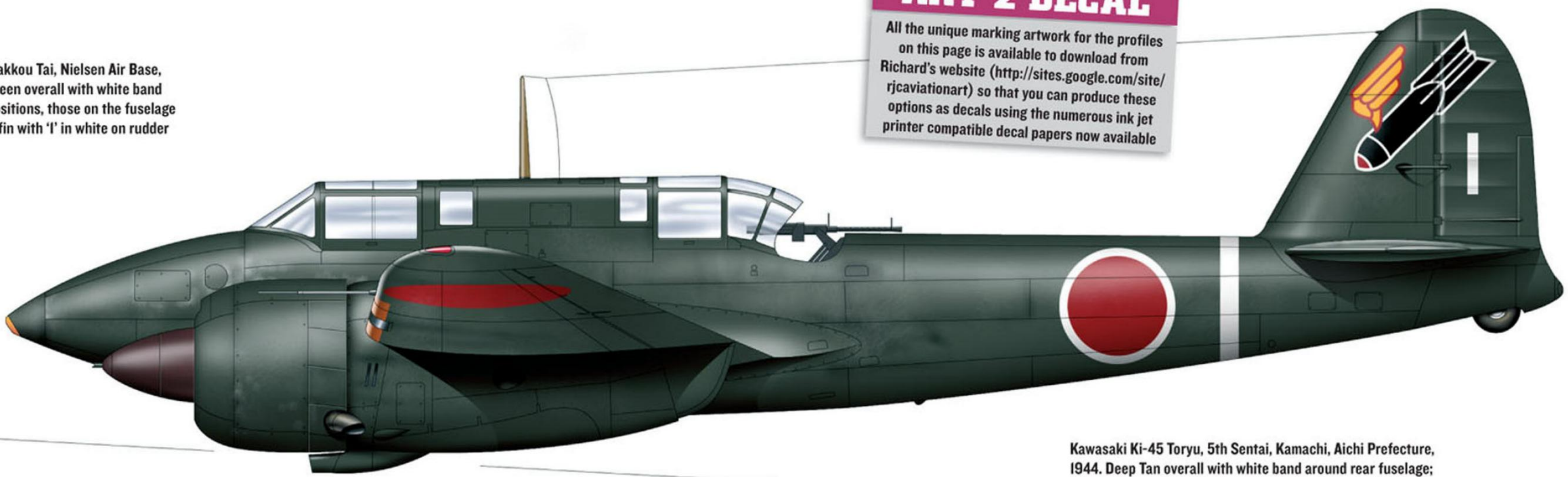
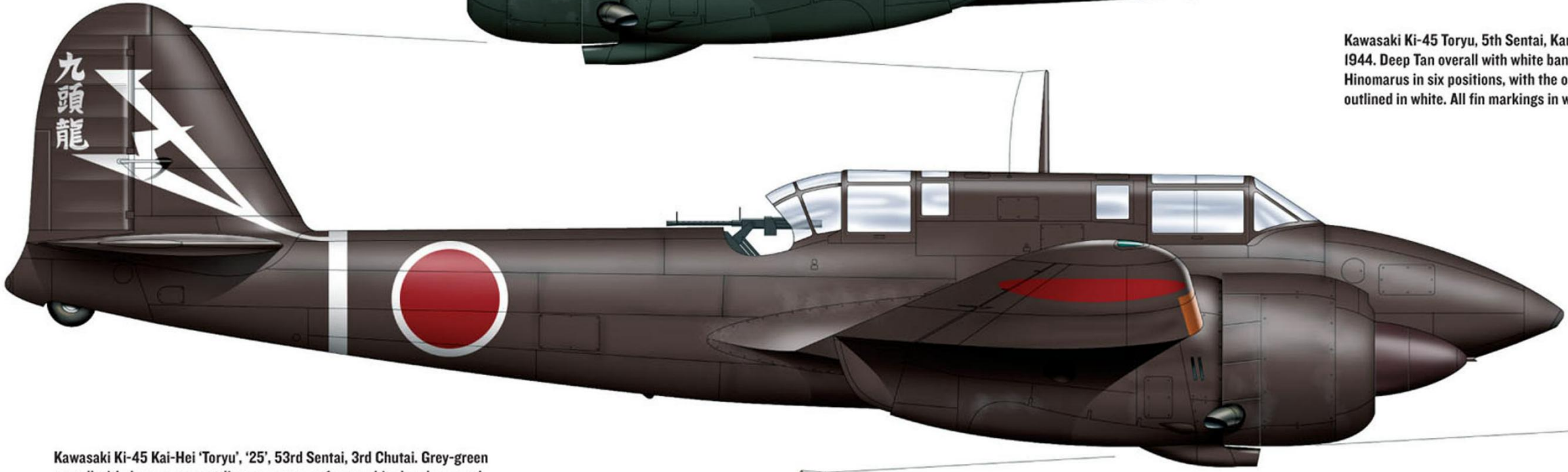
Kawasaki Ki-45 Kai-Hei Toryu, 8th Kakkou Tai, Nielsen Air Base, Philippines, December 1944. Deep Green overall with white band around fuselage; Hinomarus in six positions, those on the fuselage having a white outline. Unit motif on fin with 'I' in white on rudder



Kawasaki Ki-45 Toryu, 5th Sentai, Kamachi, Aichi Prefecture, 1944. Deep Tan overall with white band around rear fuselage; Hinomarus in six positions, with the one on the fuselage outlined in white. All fin markings in white



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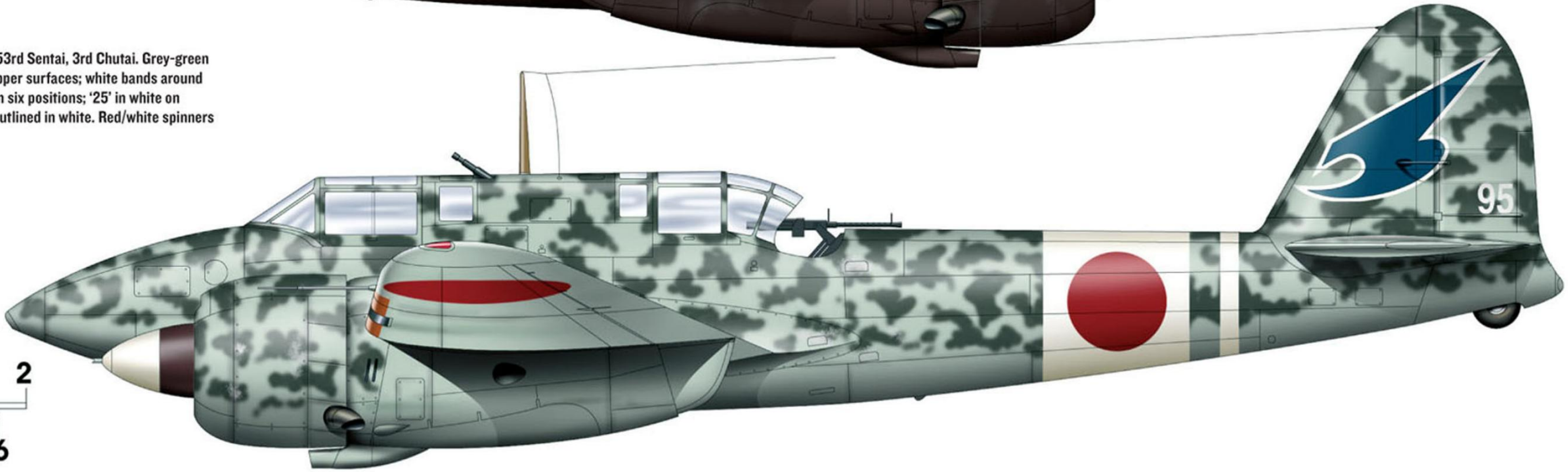
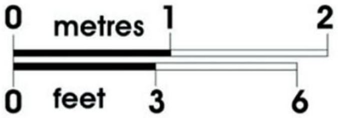
Kawasaki Ki-45 Kai-Hei 'Toryu', '25', 53rd Sentai, 3rd Chutai. Grey-green overall with deep green mottling on upper surfaces; white bands around rear fuselage and wings. Hinomarus in six positions; '25' in white on rudder, unit marking in yellow thinly outlined in white. Red/white spinners



PROFILES 1:48 Scale



May 2011

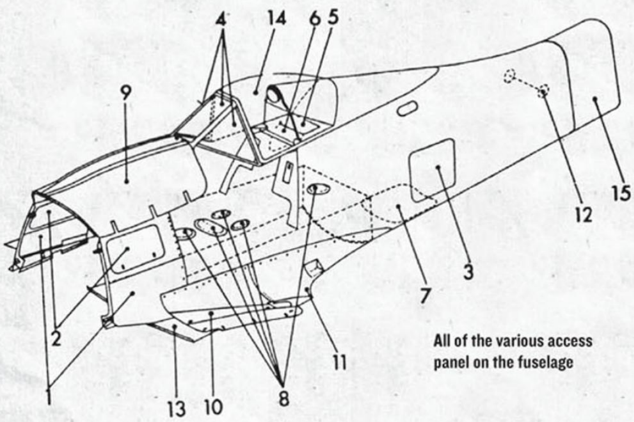
reference material

Focke-Wulf
Flugzeugbau G.m.b.H.

Ta 152 H-0 und H-1
Vorläufiges Flugzeug-Handbuch

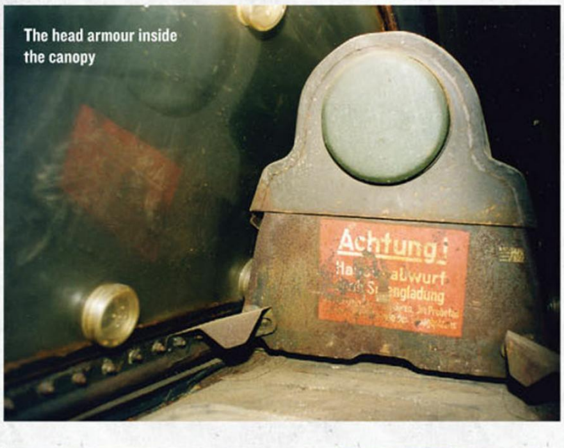
Ausgabe Dezember 1944

This is the access hatch in the port fuselage side, visible inside is the (black) MW50 tank

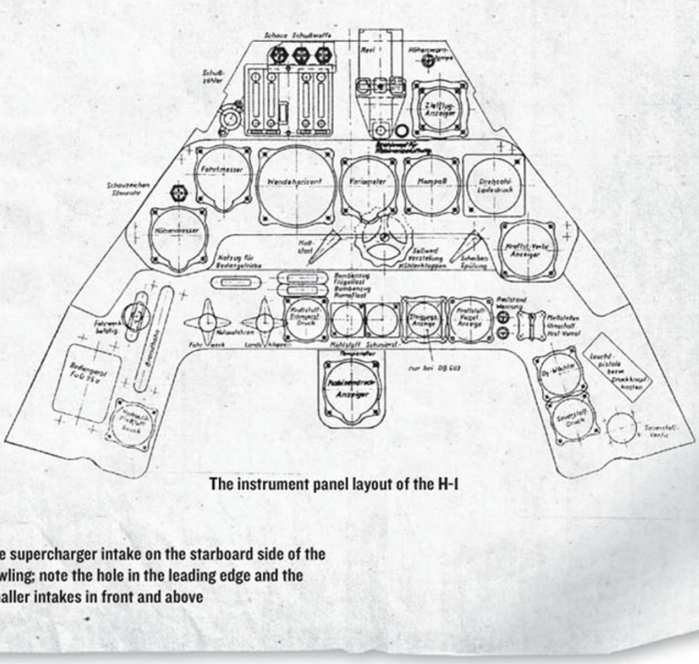


All of the various access panel on the fuselage

The port side of the engine with the cowling open, showing the struture within the latter

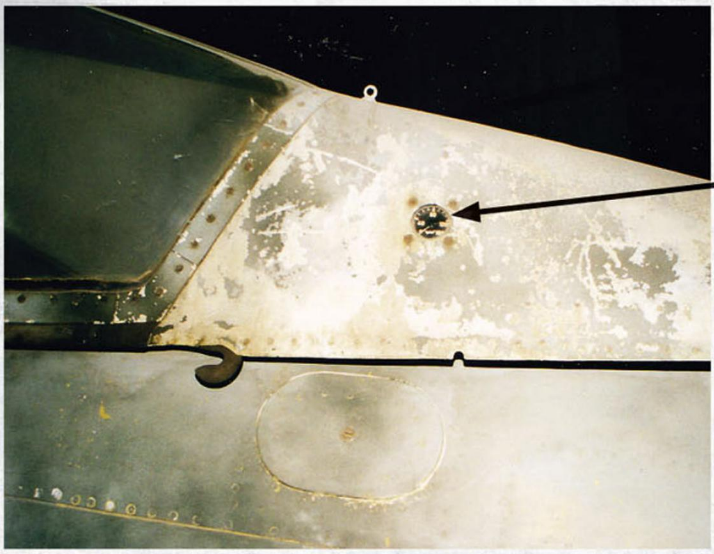


The head armour inside the canopy



The instrument panel layout of the H-I

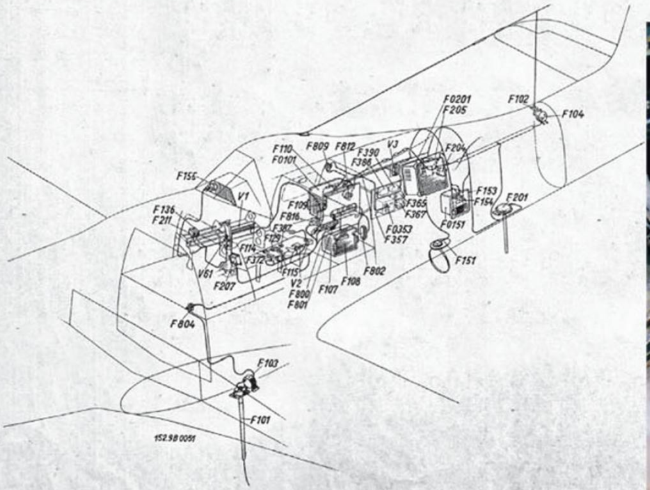
The supercharger intake on the starboard side of the cowling; note the hole in the leading edge and the smaller intakes in front and above



Close-up of the pressure gauge

The pressure gauge is just visible in the decking behind the canopy. Note the hooks in the lower canopy edge

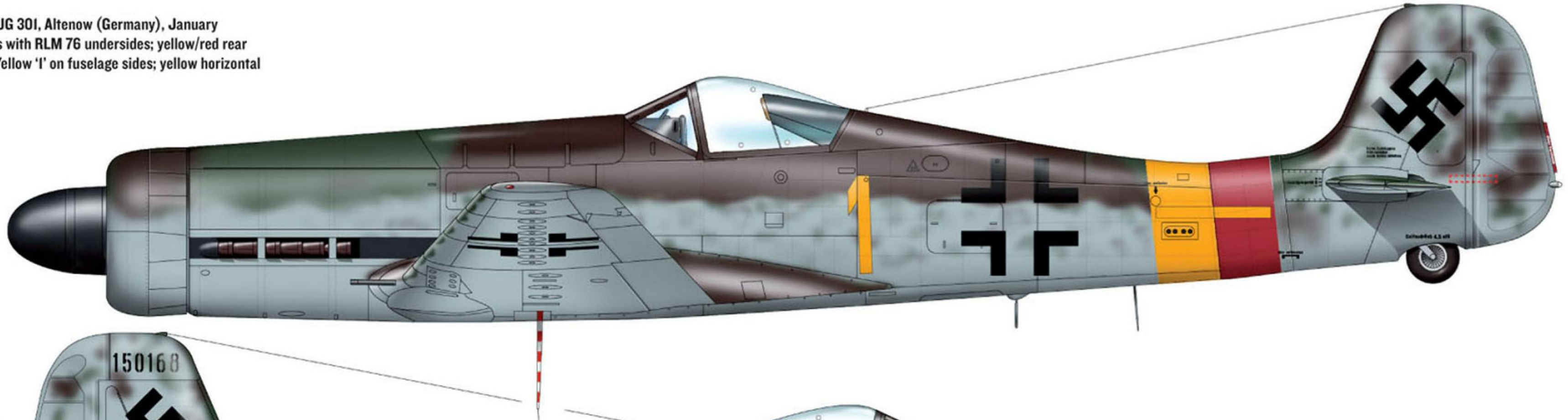
The port sidewall in the cockpit of the world's only surviving Ta 152H, seen here at Silver Hill in 2000

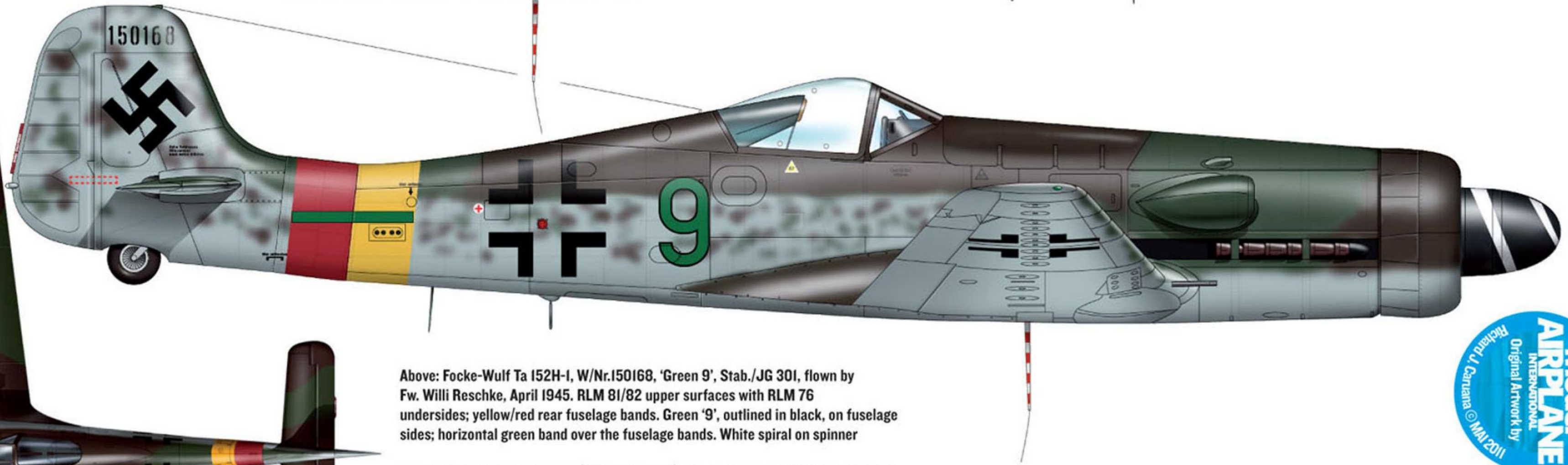


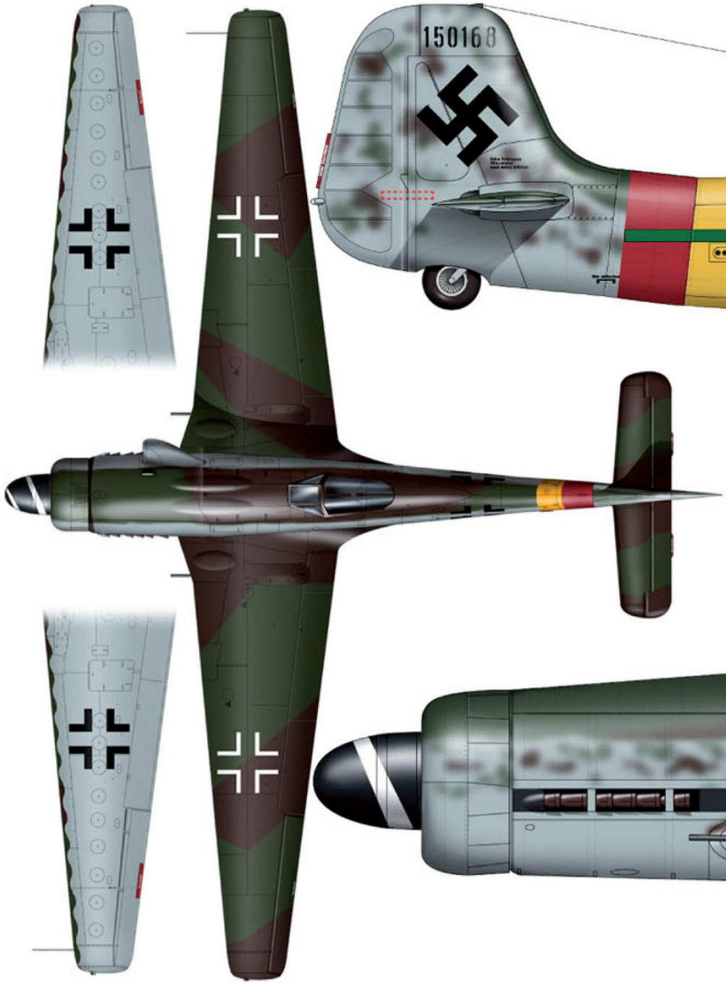
All the various radio and electrical equipment

The starboard sidewall in the cockpit, also at Silver Hill in 2000

Focke-Wulf Ta 152H-1, 'Yellow 1', II./JG 301, Altenow (Germany), January 1945. RLM 81 and 82 upper surfaces with RLM 76 undersides; yellow/red rear *Reichsverteidigung* fuselage band. Yellow '1' on fuselage sides; yellow horizontal bar over the fuselage bands







Above: Focke-Wulf Ta 152H-1, W/Nr.150168, 'Green 9', Stab./JG 301, flown by Fw. Willi Reschke, April 1945. RLM 81/82 upper surfaces with RLM 76 undersides; yellow/red rear fuselage bands. Green '9', outlined in black, on fuselage sides; horizontal green band over the fuselage bands. White spiral on spinner

Below: Focke-Wulf Ta 152H-1, (W/Nr. unknown), 'Green 8', Stab./JG 301, April 1945. RLM 81/82 upper surfaces with RLM 76 undersides; yellow/red rear fuselage bands. Green '8', outlined in black, on fuselage sides; horizontal green band over the fuselage bands. White spiral on spinner

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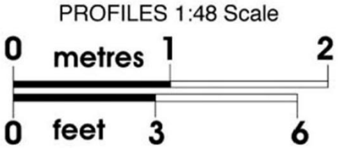
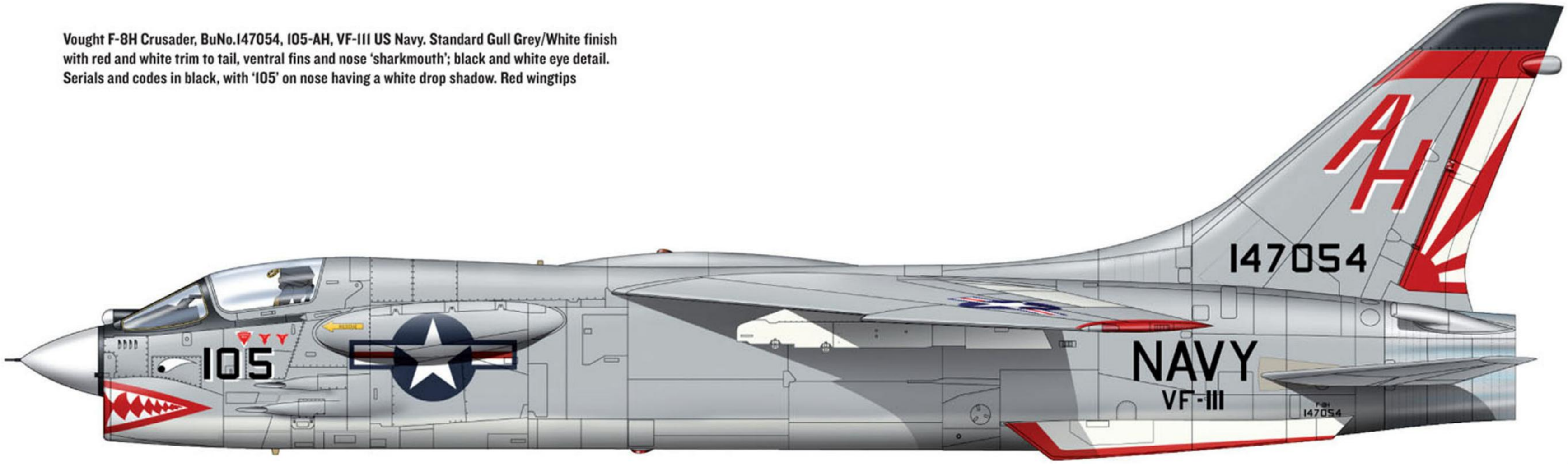
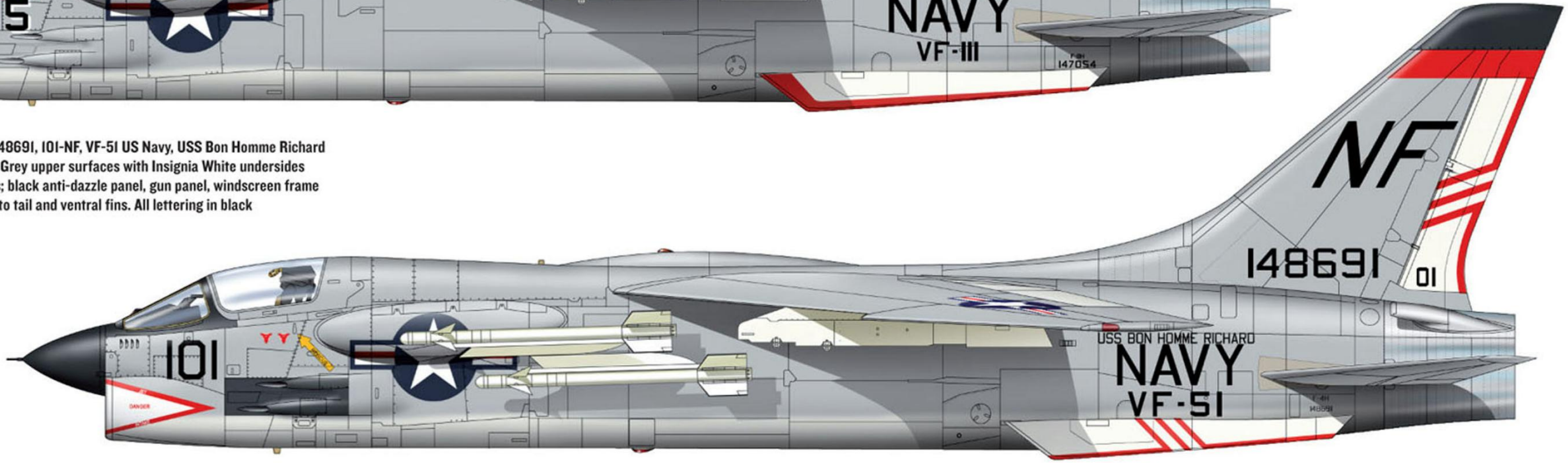


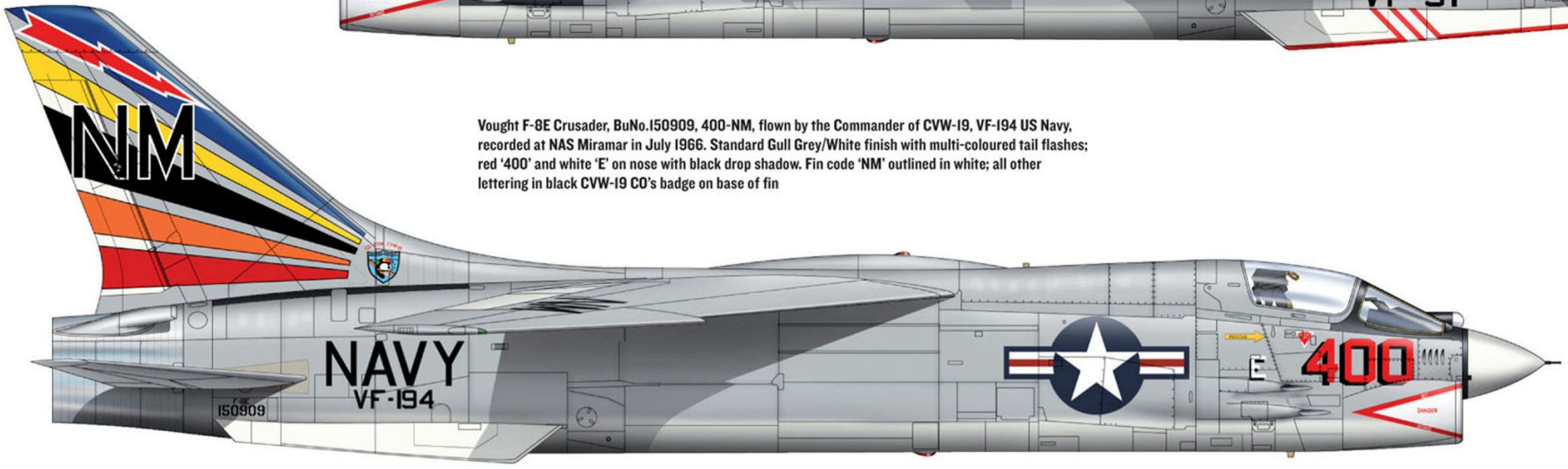
Vought F-8H Crusader, BuNo.147054, 105-AH, VF-111 US Navy. Standard Gull Grey/White finish with red and white trim to tail, ventral fins and nose 'sharkmouth'; black and white eye detail. Serials and codes in black, with '105' on nose having a white drop shadow. Red wingtips

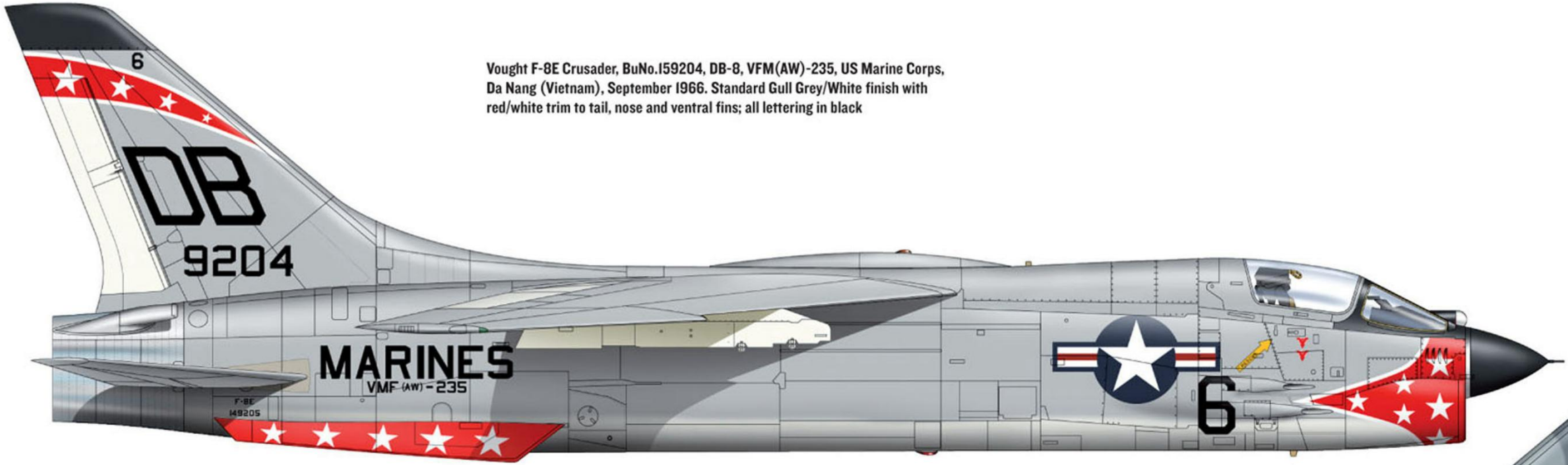


Vought F-8H Crusader, BuNo.148691, 101-NF, VF-51 US Navy, USS Bon Homme Richard (CVA-31), 1968. Standard Gull Grey upper surfaces with Insignia White undersides and moveable control surfaces; black anti-dazzle panel, gun panel, windscreen frame and nose cone; red/white trim to tail and ventral fins. All lettering in black

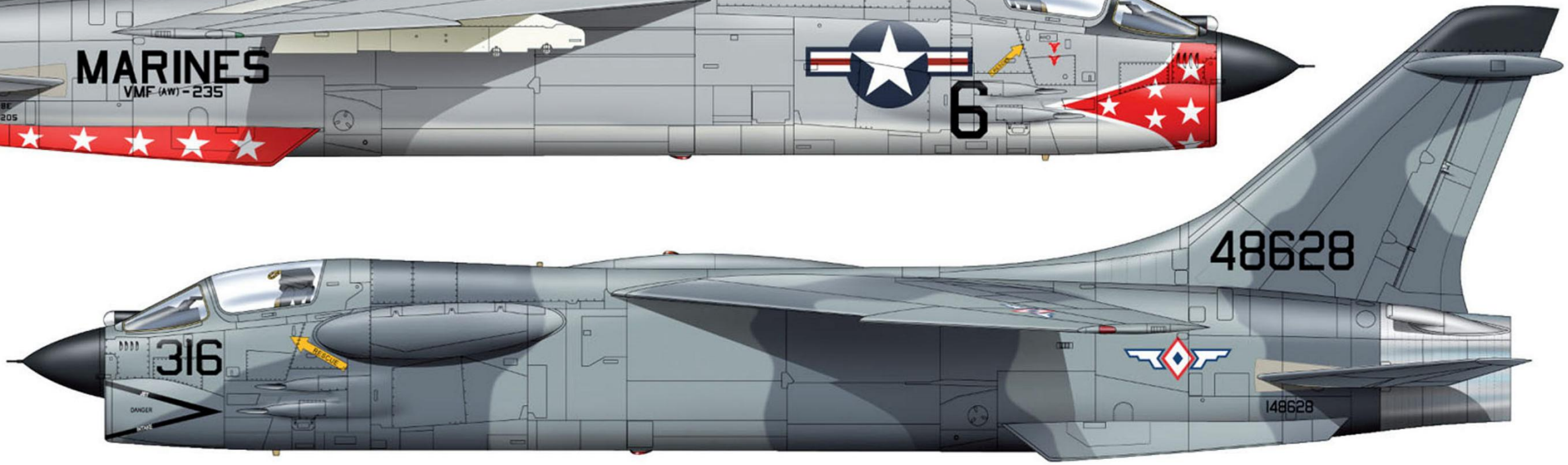


Vought F-8E Crusader, BuNo.150909, 400-NM, flown by the Commander of CVW-19, VF-194 US Navy, recorded at NAS Miramar in July 1966. Standard Gull Grey/White finish with multi-coloured tail flashes; red '400' and white 'E' on nose with black drop shadow. Fin code 'NM' outlined in white; all other lettering in black CVW-19 CO's badge on base of fin



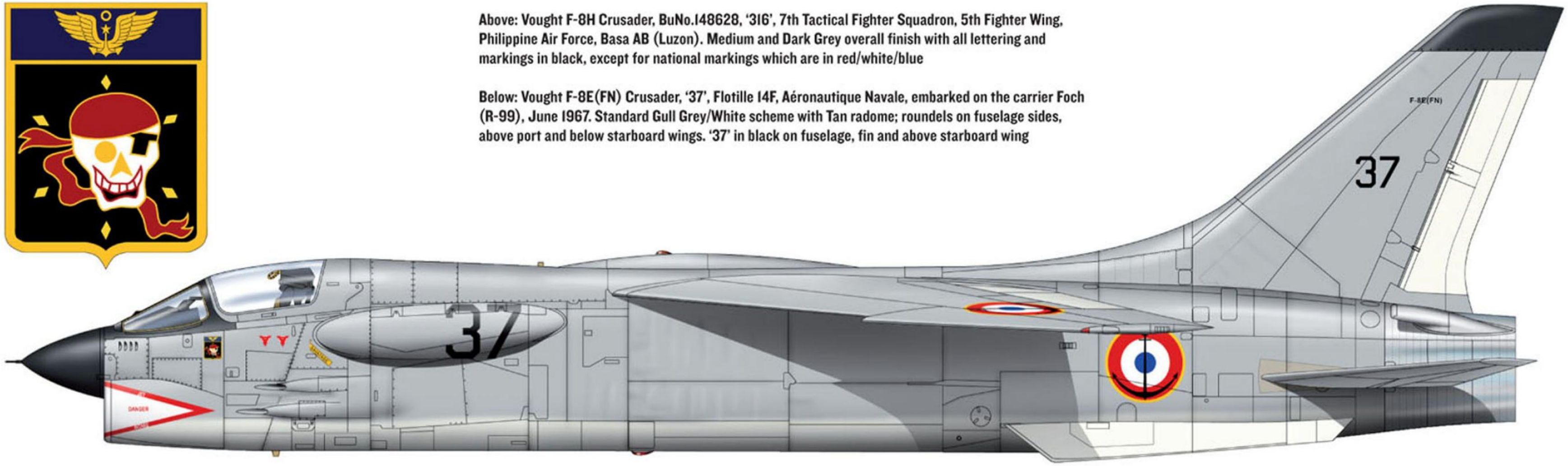


Vought F-8E Crusader, BuNo.159204, DB-8, VFM(AW)-235, US Marine Corps, Da Nang (Vietnam), September 1966. Standard Gull Grey/White finish with red/white trim to tail, nose and ventral fins; all lettering in black

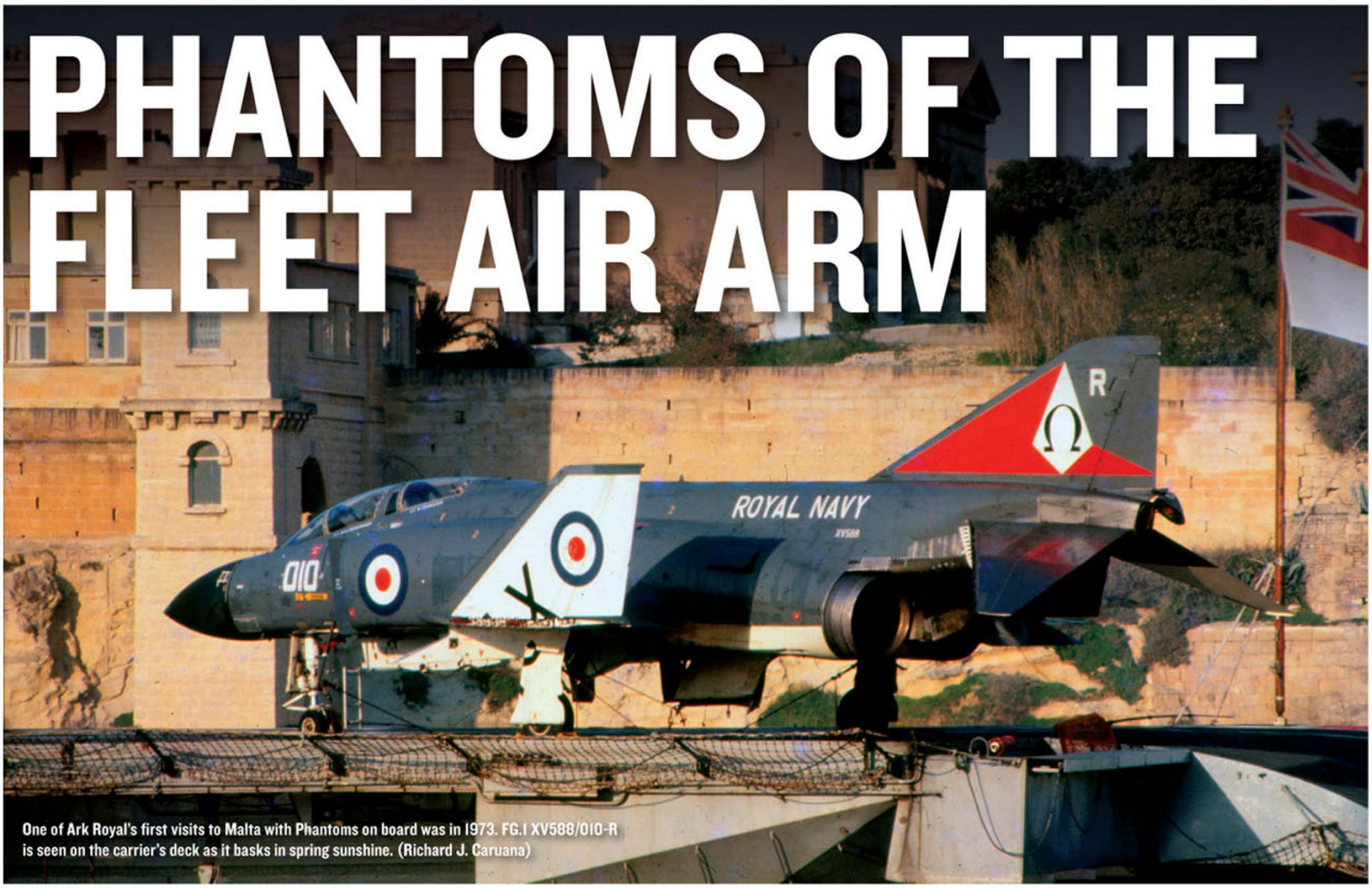


Above: Vought F-8H Crusader, BuNo.148628, '316', 7th Tactical Fighter Squadron, 5th Fighter Wing, Philippine Air Force, Basa AB (Luzon). Medium and Dark Grey overall finish with all lettering and markings in black, except for national markings which are in red/white/blue

Below: Vought F-8E(FN) Crusader, '37', Flotille 14F, Aéronautique Navale, embarked on the carrier Foch (R-99), June 1967. Standard Gull Grey/White scheme with Tan radome; roundels on fuselage sides, above port and below starboard wings. '37' in black on fuselage, fin and above starboard wing



PHANTOMS OF THE FLEET AIR ARM



One of Ark Royal's first visits to Malta with Phantoms on board was in 1973. FG.1 XV588/010-R is seen on the carrier's deck as it basks in spring sunshine. (Richard J. Caruana)

Although the success of the F-4 Phantom as a fighting machine is an undisputed fact, its introduction into British service highlighted its potential and versatility on one hand, while at the same time demonstrated the higher costs and loss of performance suffered by the British version through political meddling. Budget cuts during the early 1960s had already axed a number of ongoing projects such as TSR.2 and the Hawker P.1154. The latter, in particular, was a vertical take-off and landing (VTOL) type with which the Royal Air Force (RAF) planned to replace its Hunter force. The Royal Navy (RN) was offered as two-seat version, designated P.1154RN which, however, was a far cry from what was actually required as a replacement for the Sea Vixen. Furthermore, the RN showed serious concern regarding the initial delivery dates planned in 1968 for the P.1154RN. The Admiralty also had reservations as regards the selected powerplant for this aircraft, the Bristol Siddeley BS.108. Lack of RN interest in an indigenous design could also have matured due to McDonnell's serious drive to sell its F-4 Phantom overseas, since as far back as 1959 it had already started to communicate with the Admiralty through a series of presentations. Conscious of the changes that would be required to adapt the type for use on British aircraft carriers the American company had sought the cooperation of Rolls-Royce in 1960 to investigate the possibility of fitted Spey 200/203 engines in place of the standard General Electric J79s. During that same year a RN pilot was also allowed to fly the F4H-1 that McDonnell Aircraft Corporation were beginning to deliver to the United States Navy (USN). In 1961 the F-4 Phantom on display at that year's Paris Air Show flew to RN Air Station (RNAS) Yeovilton before returning to the US. Obvious points raised during this sales drive were that the F-4 was immediately available and that it would be cheaper than the P.1154; through hindsight, the latter is highly debatable.

More demonstration flights and RN pilot familiarisation tours continued throughout the following two years until a decision was taken in 1963 in favour of a single common type between RN and RAF, which would be the P.1154. Still unhappy with the decision, the Admiralty continued to oppose the adoption of this aircraft and the list of reasons for such a stance were, in their majority, well and truly justified. Early in 1964 the P.1154RN was cancelled and the RN had decided in favour of the F-4 Phantom. A change in government in the United Kingdom (UK) the following year axed both P.1154 and TSR.2 that were to replace the Hunter and Canberra respectively, leaving the RAF with no alternative but to look in the same direction as the RN and adopt the F-4.

On 27 February 1964 the RN announced its order for the F-4 as a replacement for its Sea Vixens, to be powered by the Rolls-Royce Spey. Choice of engine was not simply a political decision so that the new navy fighter would incorporate a certain percentage of British equipment; that engine was already in use by the Buccaneer S.2 already in RN service and a common power plant would significantly ease maintenance on board carriers. Apart from the British engines, the Ministry of Defence (MoD) reached agreement with McDonnell so that the rear fuselage would be built by British Aircraft Corporation (BAC), Shorts would build the outer wing sections, Ferranti would build the radar and British equipment would be used wherever possible.

First flight for the RN Phantom, designated F-4K, was planned for June 1966 with deliveries to begin in April of the following year. The two prototypes were to be based on the F-4J, the type that was planned as a replacement of the F-4B in USN and US Marine Corps (USMC) service. Axing of the P.1154 meant that the RAF would also have to adopt the F-4 as a Hunter replacement even though it had serious reservations, primarily aimed at the fact that the 'British' Phantom as planned for the

FG.1 XT860/014-R comes in to land at RAF Luqa (Malta) in March 1973. Note the 'Red Rippers' badge zapped on the fin. (Richard J. Caruana)

McDONNELL DOUGLAS PHANTOM FG.1

XT860, VL/726, No.700P Naval Air Squadron FAA, Yeovilton. Extra Dark Sea Grey BS381C-640 upper surfaces with white undersides; all lettering in white, except serial below wings which is black. National markings in six positions; unit marking consists of red diamond with black/white 'Spook', wearing a Union Jack. Note style of 'VL' on fin

McDONNELL DOUGLAS PHANTOM FG.1

XT865, '156', No 767 Naval Air Squadron FAA, Yeovilton, 1969. RAF-style camouflage in Dark Green (BS.381C-641)/Dark Sea Grey (BS.381C-638) upper surfaces with Light Aircraft Grey (BS.381C-627) undersides; serial in black, repeated below wings. Code in white; unit badge in yellow and black on fin. National markings in six positions. Originally delivered to the A&AEE, and after serving with No.767 NAS it also served with No.892 NAS, the RAE, became 'U' and 'BU' of No.111 Squadron RAF, was scrapped in September 1991

Model AIRPLANE INTERNATIONAL Original Artwork by Richard J. Caruana © MAI 2011

McDONNELL DOUGLAS PHANTOM FG.1

XT867, NASU, HMS Heron (Yeovilton), 1968. Extra Dark Sea Grey BS381C-640 upper surfaces with white undersides; Dayglo heron motif on fin (both sides). All lettering in white, except serial which is repeated below wings in black; national markings in six positions. Later served with 767 NAS and then as 'H' and 'BH' with No. 111 Squadron RAF, became 9064M and eventually scrapped at Leuchars in April 2001

MAY 2011

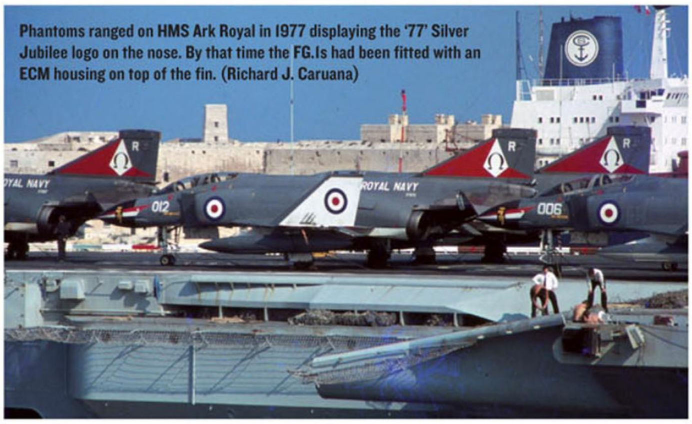
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26 Model AIRPLANE	27	28
29	30	31				

McDONNELL DOUGLAS PHANTOM FG.1

XT867, R/013, No.892 Naval Air Squadron FAA, 1975. Extra Dark Sea Grey BS381C-640 upper surfaces with white undersides; red/white unit badge on fin with black 'Alpha' within which this particular aircraft carried a green shamrock. All lettering in white, except serial below wings which is black; national markings in six positions. '13' repeated in white on extreme tail and above inboard flaps

Model AIRPLANE INTERNATIONAL Original Artwork by Richard J. Caruana © MAI 2011

Sheer power can be seen in this take-off shot of Phantom FG.1 XT865 as it departs from Luqa (Malta) on an exercise flight in March 1973 (Joseph E. Spiteri)



Phantoms ranged on HMS Ark Royal in 1977 displaying the '77' Silver Jubilee logo on the nose. By that time the FG.1s had been fitted with an ECM housing on top of the fin. (Richard J. Caruana)

RN could not possibly be considered as suitable for land-based operations. A political decision however had been taken that both RN and RAF would operate the Phantom with Spey engines, even though the RAF would have certainly preferred a J79-powered version that would have been much cheaper, faster and able to operate at higher altitudes – all points on which the Spey-powered version could never deliver.

To be able to operate from British carriers, the RN version required a 180º folding nose section to be able to use the deck lifts. The nose leg extension was to lengthened from 20in to 40in to enable the aircraft to sit at a higher angle of attack and thus hold altitude after launch from the RN carrier catapults at a lower wing over deck (WOD) speeds. Main undercarriage legs were rated for 38,000lb landings at a sink rate of 24ft per second and the arrestor gear was strengthened. The fuselage had to undergo major surgery in order to house the Spey engines: the air intake ducts had to be completely redesigned, being some 6in wider, and were fitted with larger bellmouth nozzles, new inlet and new bellmouth control systems. Auxiliary air doors were fitted to the rear fuselage while the area around the engine exhaust nozzles had to be drastically modified to comply with the slight down-angle of the exhaust required to improve take-off performance. Some 300lb extra of Titanium shielding for the tail unit were required. Also developed for the F-4K were the slotted stabilator and drooping ailerons, together with larger flaps. All these modifications added to the cost of procuring what should have been an 'off-the-shelf' fighter.

Although on paper the Spey engines could produce more power and be more fuel-efficient that the J79s, the higher fuselage drag caused by the larger air intakes practically cancelled all advantages of the British engine. The version fitted to the British Phantom was the Spey RB 168-25R, a supersonic version with reheat capabilities of up to Mach 2.0. It had a dry rating of 12,250lb st and a static thrust with afterburner of 20,515lb.

Originally the Admiralty had requested the procurement of 143 F-4Ks, which would eventually be know as FG.1s in British service. Due to further budget cuts and political decisions this amount was reduced to 48 to equip two Carrier Air Groups (CAG) and a training squadron, at a time when it had also been decided to refit HMS Eagle and HMS Ark Royal to suit Phantom operations with a planned life up to the late 1970s. Within a short time these plans were revised once again so that Ark Royal would be the only one to be refitted, and 20 of the FG.1s on order would go directly to the RAF. Another change in government in 1969 would only extend Ark Royal's service life to 1978.

The first three FG.1s reached RNAS Yeovilton in April 1968 (Operation Translant) where No.700P Intensive Flying Unit was formed on the 30th of that month. In January of the following year it was flying six FG.1s at Yeovilton when it was disbanded and replaced on the 14th of that month by No.767 Naval Air Squadron (NAS), commissioned as the Fleet Air Arm's (FAA) formal training unit, and which remained operational up to 1 August 1972. No.892 NAS was formed at Yeovilton on 1 March 1969 and was destined to become the only operational Phantom unit of the RN. Initial carrier trials were carried out on HMS Eagle for a brief period in the English Channel while most of 892's work had to be performed from Yeovilton, with detachments at RAE Bedford until HMS Ark Royal's refit had been complete in 1970. Meanwhile the RN Phantom had won a prestigious honour by winning the Daily Mail's Transatlantic Air Race on 11 May 1969 setting a record flight time of 4 hours, 46 minutes and 57 seconds from New York to London in the process, thus capturing the Blue Riband and £6,000 in prize money.

With work on Ark Royal completed, 892 NAS could embark its Phantoms and set off on a short naval career for the type with its first cruise in June 1970. The carrier was also visited from time to time by FG.1s from 767 NAS for practice flight until the unit was disbanded on 1 August 1972, with all Phantom training tasks becoming the responsibility of the RAF. No.892 NAS moved its land base from RNAS Yeovilton to RAF Leuchars in October 1972.

Ark Royal continued to operate the Phantoms up to late 1978. On 6 April of that year 892 NAS FG.1s left Leuchars to embark on the 'Ark' for her final tour with the Phantoms on board before its paying off. During that tour the Phantom Support Unit, its duties now over, was disbanded on 29 September. On 27 November ten Phantom FG.1s took off from the deck of HMS Ark Royal as she steamed towards Davenport, landing at St Athen thus marking the end of the Phantom's naval career.

It was with a heavy heart that people like myself, accustomed to seeing FAA's Phantoms often using Luqa (Malta) for land-based exercises, to come to terms with the fact that the mighty ship and its aircraft would no longer grace the waters of Grand Harbour or our blue Mediterranean skies. While Ark Royal was reduced to scrap, 892 NAS Phantoms remained at Leuchars and fell under new management, being taken over by No.111 Squadron RAF in exchange for the FGR.2s that they had been flying, and which were passed on to other units.

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McDonnell-Douglas Phantom FG.I, XT859, 725/VL, No.700P Naval Air Squadron FAA, Yeovilton, 1968. Extra Dark Sea Grey BS381C-640 upper surfaces with white undersides; all lettering in white, except serial below the wings. National markings in six positions; 'Spook' badge on fin in red, black, blue and white. Note Rolls-Royce logo on air intake and USAF style 'Rescue' warning panel

Profiles 1:72 Scale

0 METRES 1 2

0 FEET 3 6

McDonnell-Douglas Phantom FG.I, XT861, 727/VL, No.700P Naval Air Squadron, Yeovilton, 1968. Extra Dark Sea Grey BS381C-640 upper surfaces with white undersides; all lettering in white, except serial below the wings. National markings in six positions; '27' repeated in white on tail cone

McDonnell-Douglas Phantom FG.I, XT868, 153/VL, No.767 Naval Air Squadron, Yeovilton, 1971. Extra Dark Sea Grey BS381C-640 upper surfaces with white undersides; all lettering in white, except serial below the wings. National markings in six positions; unit badge in yellow and black on fin

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McDonnell-Douglas Phantom FG.I, XT857, LU, No.767 Naval Air Squadron, Leuchars. Extra Dark Sea Grey BS381C-640 upper surfaces with white undersides; all lettering in black except code on rudder which is white. National markings in six positions; unit badge in yellow and black on fin

McDonnell-Douglas Phantom FG.1, XV591, 013/R, No.892 Naval Air Squadron FAA. Extra Dark Sea Grey BS381C-640 upper surfaces with white undersides; all lettering in white, except serial below the wings which is black (positioned on fixed wing section only). National markings in six positions; red/white/black unit marking on vertical tail surfaces. White Ensign on fuselage sides

McDonnell Douglas Phantom FG.1, XT860, 014/R, No.892 Naval Air Squadron, HMS Ark Royal, recoded at Malta in March 1973. Extra Dark Sea Grey BS381C-640 upper surfaces with white undersides; all lettering in white, except for black serial below the wing. Red/white/black unit markings on vertical tail surfaces with US Navy VF-11 'Red Rippers' badge superimposed. '14' repeated on tail cone

ART 2 DECAL

All the unique marking artwork for the profiles on this page are available to download from Richard's website (http://sites.google.com/site/rjcaviationart) so that you can produce these options as decals using the numerous ink jet printer compatible decal papers now available

Bottom: McDonnell-Douglas Phantom FG.1, XT867, 005/R, No.892 Naval Air Squadron FAA, HMS Ark Royal, 1977. Extra Dark Sea Grey BS381C-640 upper surfaces with white undersides; all lettering in white, except black serial below the wings positioned on fixed inboard section. National markings in six positions; red/white/blue flash on nose with '77' logo in yellow. '05' repeated on tail cone

Below: McDonnell-Douglas Phantom FG.1, XT866, 'W', Phantom Training Flight, recorded at Malta in October 1974. Extra Dark Sea Grey BS381C-640 upper surfaces with white undersides; all lettering in black except code 'W' on fin, which is white. National markings in six positions; unit badge in black and white on fin

Profiles 1:72 Scale

0 METRES 1 2

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McDonnell-Douglas Phantom FG.1, XV568, 002/R, No.892 Naval Air Squadron FAA, 1977. Extra Dark Sea Grey BS381C-640 upper surfaces with white undersides; all lettering in white, except black serial below the wings positioned on fixed inboard section. National markings in six positions; red/white/blue flash on nose with '77' logo in yellow and Prince Edward Crown. '02' repeated on tail cone

McDonnell-Douglas Phantom FG.1, XV590, 001/R, No.892 Naval Air Squadron, NAS Oceana, 1978. Extra Dark Sea Grey BS381C-640 upper surfaces with white undersides; all lettering in white, except for black serial below the wings positioned on fixed inboard section. National markings in six positions, with those on the air intakes repainted to represent the early USN roundel; red/white/blue flash on nose with No.892 NAS crest superimposed. 'Royal' painted over in dark grey and replaced by 'Colonial' in white; VF-171 badge on mid fuselage and a smaller version within the 'Omega' of the tail markings

McDonnell-Douglas Phantom FG.1, XT870, 012/R, No.892 Naval Air Squadron FAA, during HMS Ark Royal's last cruise of 1978. Extra Dark Sea Grey BS381C-640 upper surfaces with white undersides; all lettering in white, except for black serial below the wing positioned on inboard fixed section. Red/white/blue flash on nose with unit crest superimposed; unit badge on fin in red, white and black; national markings in six positions. '12' repeated on tail cone. Crew names in white: Flt Lt Rodda and Flt Lt M.M. Macleod on cockpit frames; NAM K Jones, NAM Robinson and NAM Smith on air intake flap

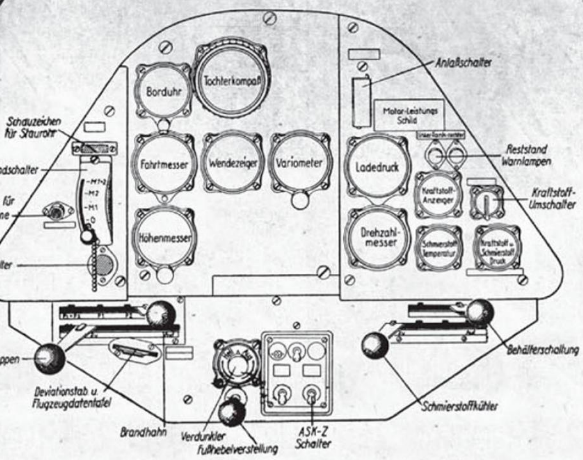
Right: Upper surface detail shows typical position and style of markings; note 'last two' of code repeated on inboard flaps in white. Underside views show serial presentation; far right shows early style, the later style shown in the other view

Profiles 1:72 Scale
0 METRES 1 2
0 FEET 3 6

ART 2 DECAL

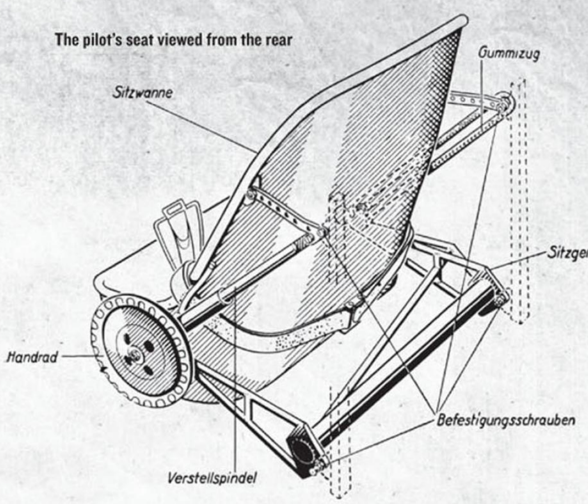
All the unique marking artwork for the profiles on this page is available to download from Richard's website (http://sites.google.com/site/rjcaviationart) so that you can produce these options as decals using the numerous ink jet printer compatible decal papers now available

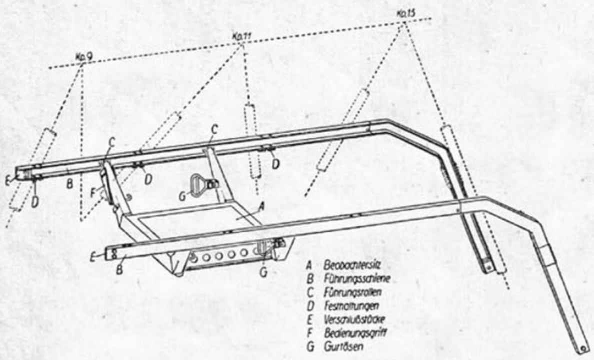
reference material



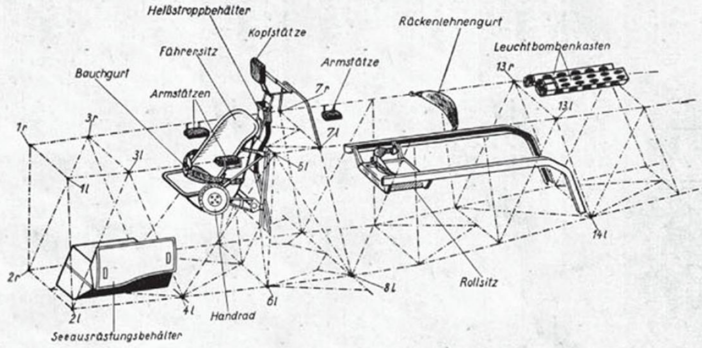
The instrument panel from the A-2 series, the A-3 version is similar

The pilot's seat viewed from the rear

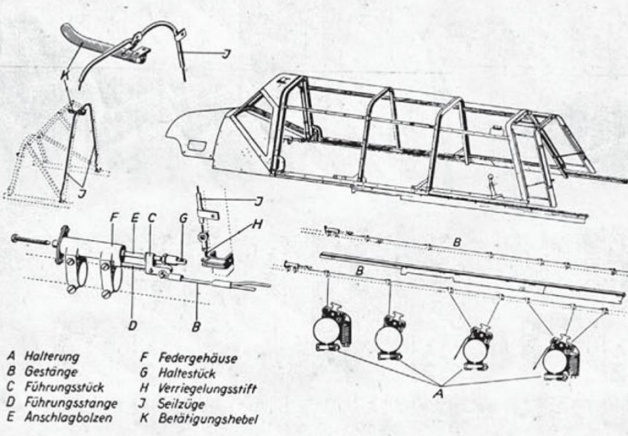




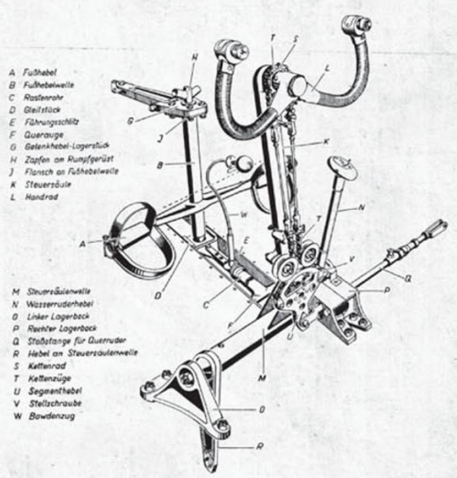
The gunner's seat, which as you can see is suspended on rails

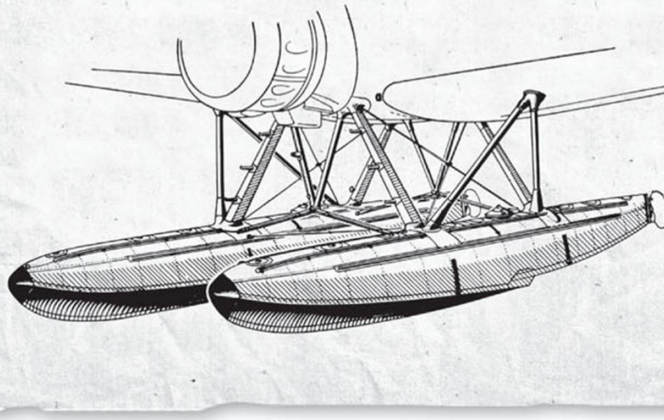


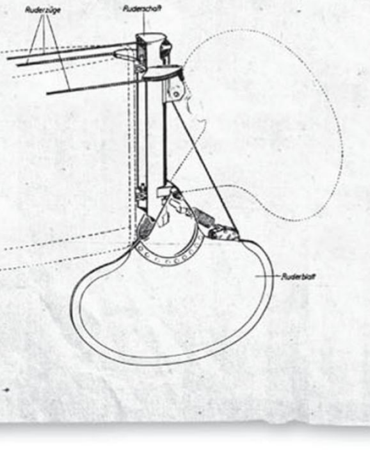
In this view of the fuselage framework you can see the relative positions of the pilot and gunner's seats



The canopy sections with the hinges and locks highlighted

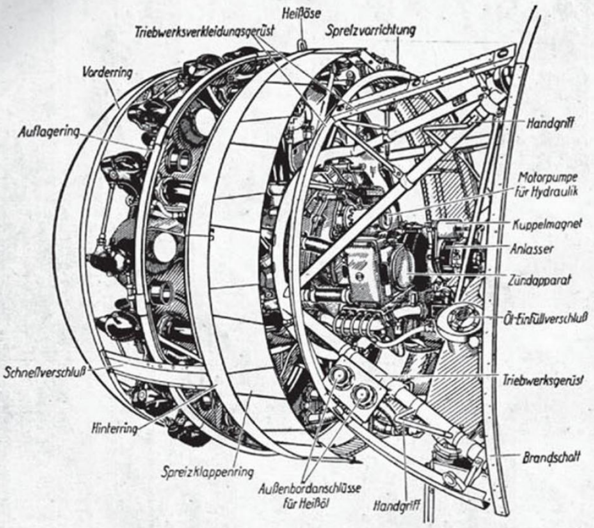




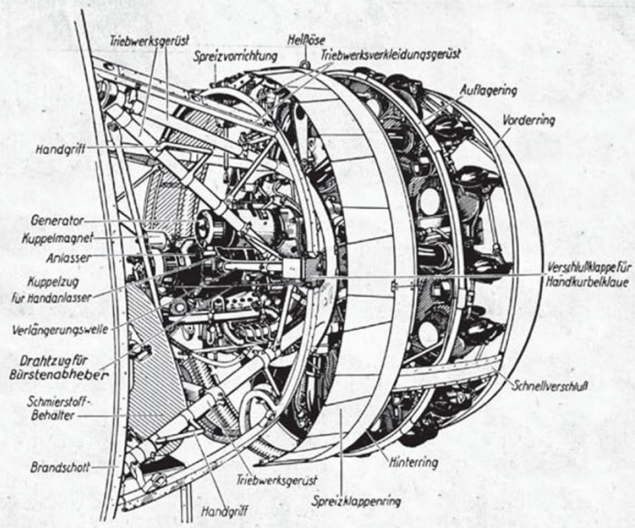


The water rudder unit, the dotted outline shows the unit in the stowed (inflight) position

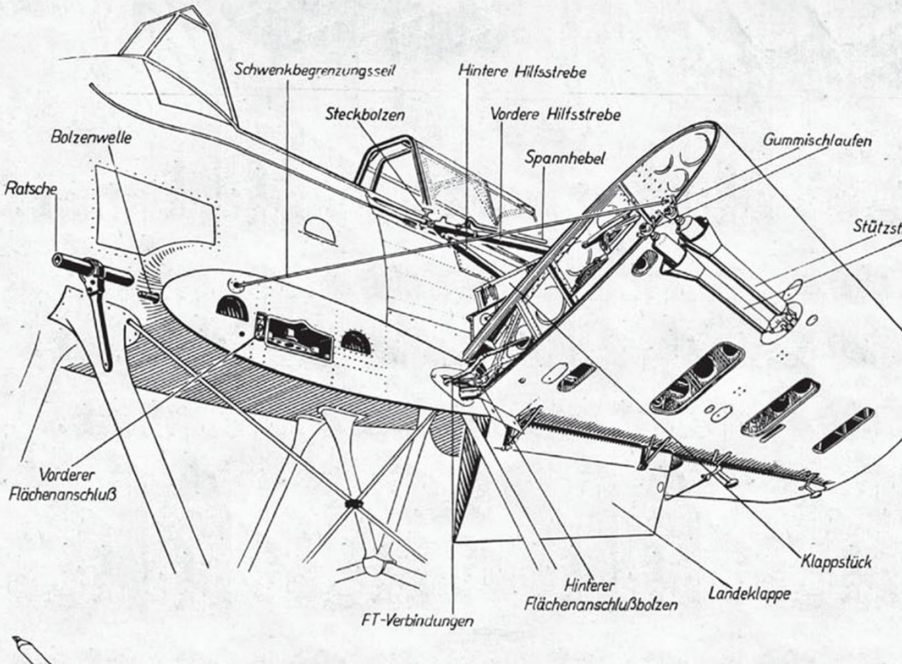
reference material



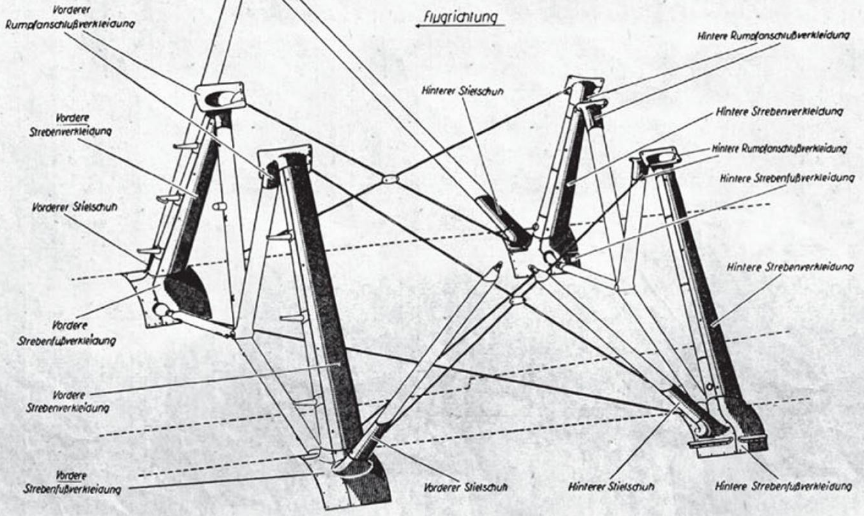
This is the port side of the engine and area aft of the bulkhead



This is the starboard side of the engine and bulkhead area

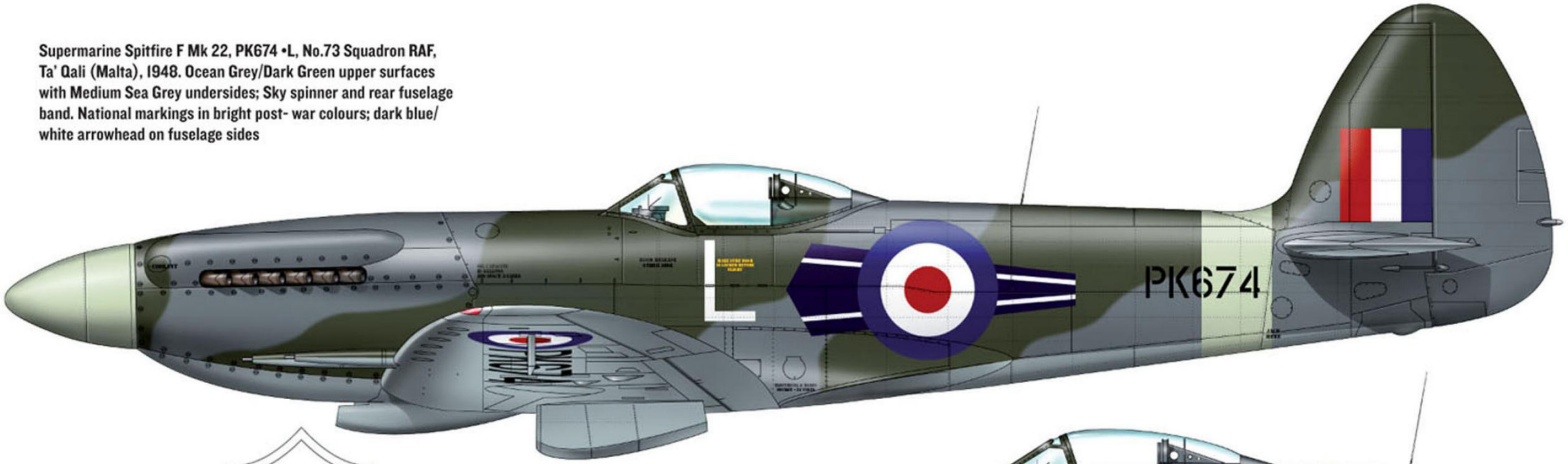


The wings show in the folded position, with the associated locks in position

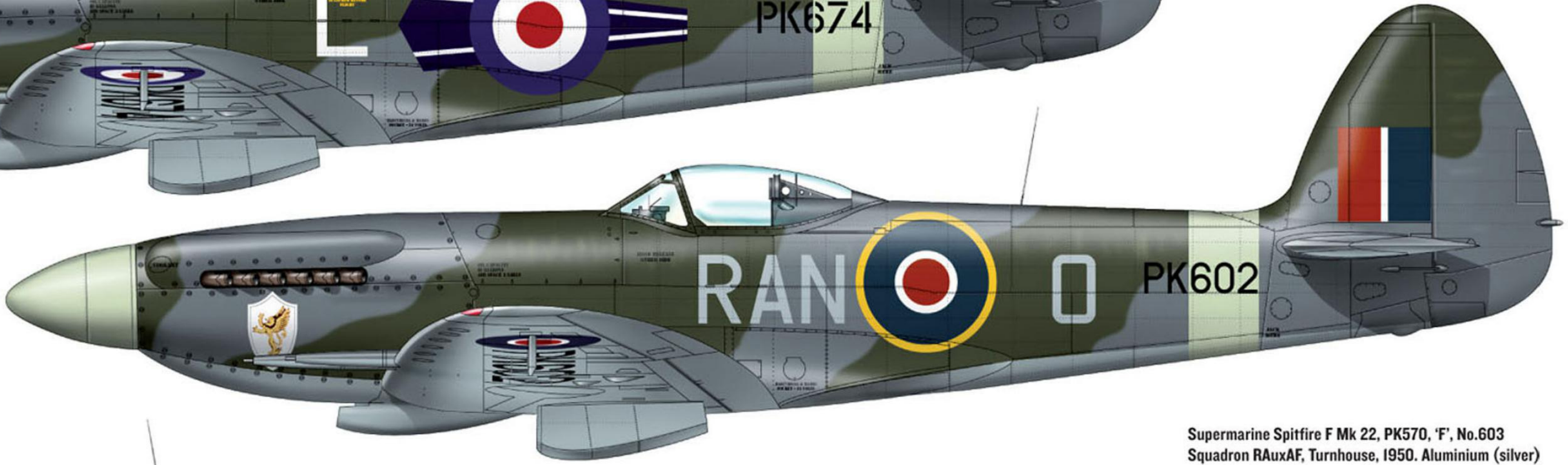


The float struts showing the rigging in this area

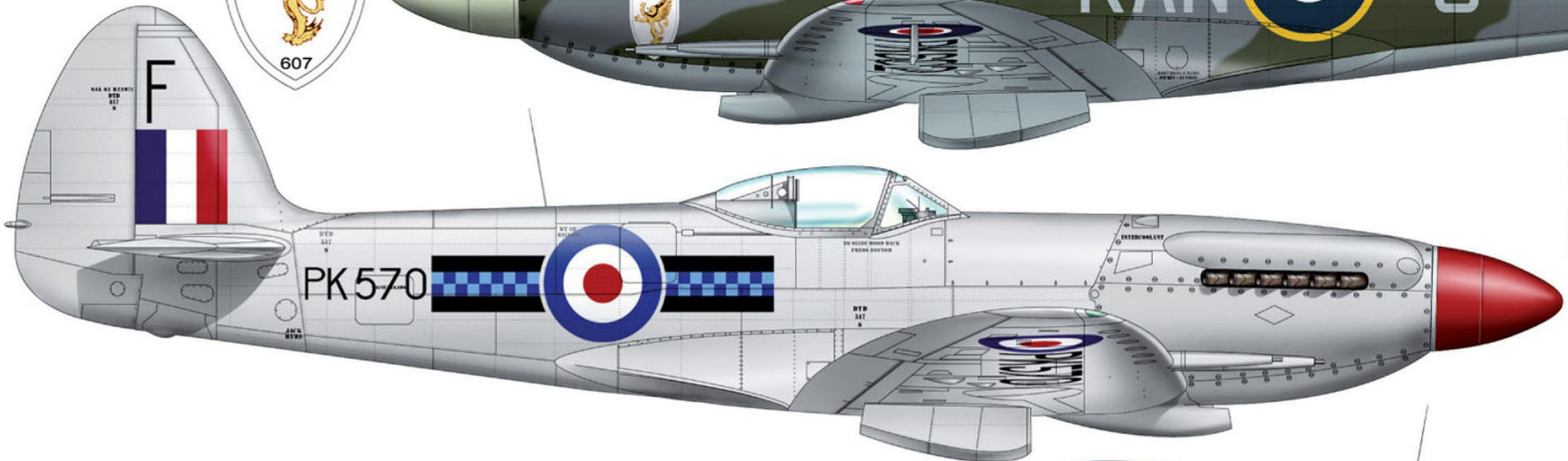
Supermarine Spitfire F Mk 22, PK674 •L, No.73 Squadron RAF, Ta' Qali (Malta), 1948. Ocean Grey/Dark Green upper surfaces with Medium Sea Grey undersides; Sky spinner and rear fuselage band. National markings in bright post- war colours; dark blue/white arrowhead on fuselage sides



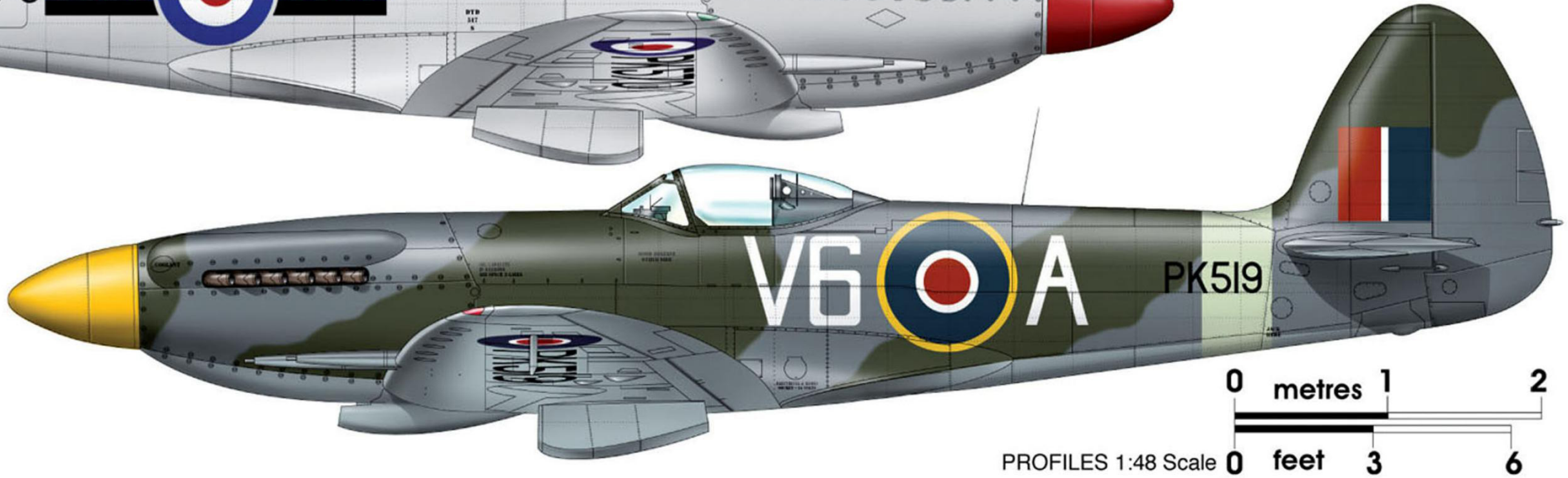
elow: Supermarine Spitfire F Mk 22, PK602, RAN•O of No.607 Squadron RAuxAF, Ouston, 1948. Ocean Grey/Dark Green upper surfaces with Medium Sea Grey undersides; Sky spinner and rear fuselage band. Medium Sea Grey codes, Night serial, the latter repeated below the wings. Unit badge on nose



Supermarine Spitfire F Mk 22, PK570, 'F', No.603 Squadron RAuxAF, Turnhouse, 1950. Aluminium (silver) overall with red spinner; dark and light blue checks with a black bar above and below, flanking fuselage roundel. Black 'F' on fin, black serials repeated under the wings. Post war national roundel in bright colours, in six positions



Supermarine Spitfire F Mk 22, PK519, V6•A, No.615 Squadron RAuxAF, Biggin Hill, 1950. Ocean Grey/Dark Green upper surfaces with Medium Sea Grey undersides; Yellow spinner and Sky rear fuselage band. White codes, Night serial, the latter repeated below the wings



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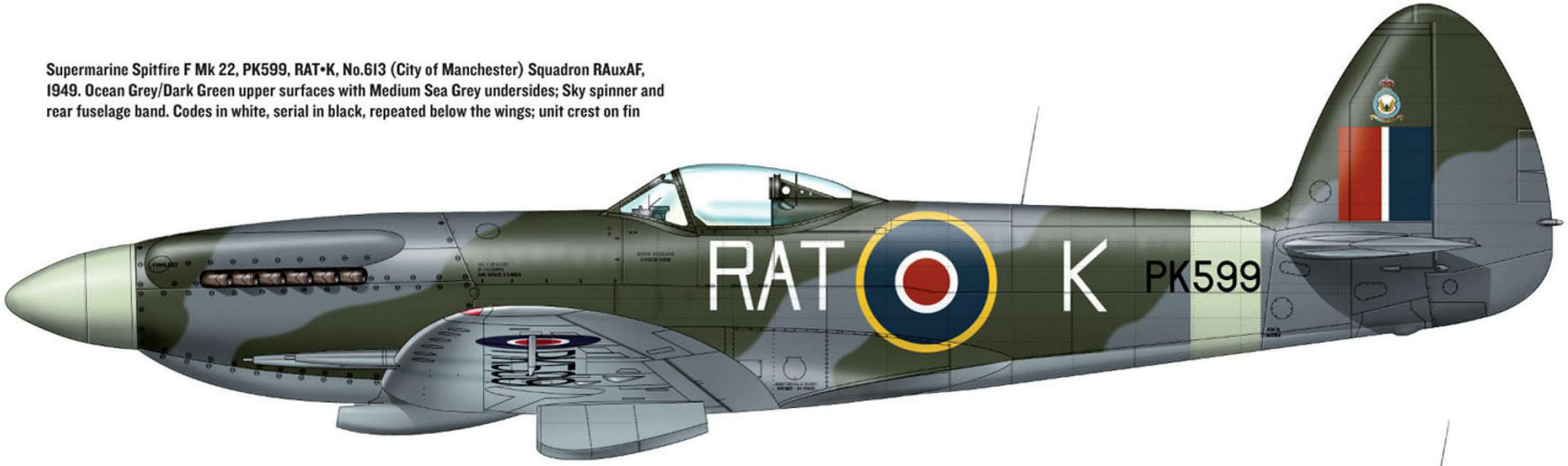
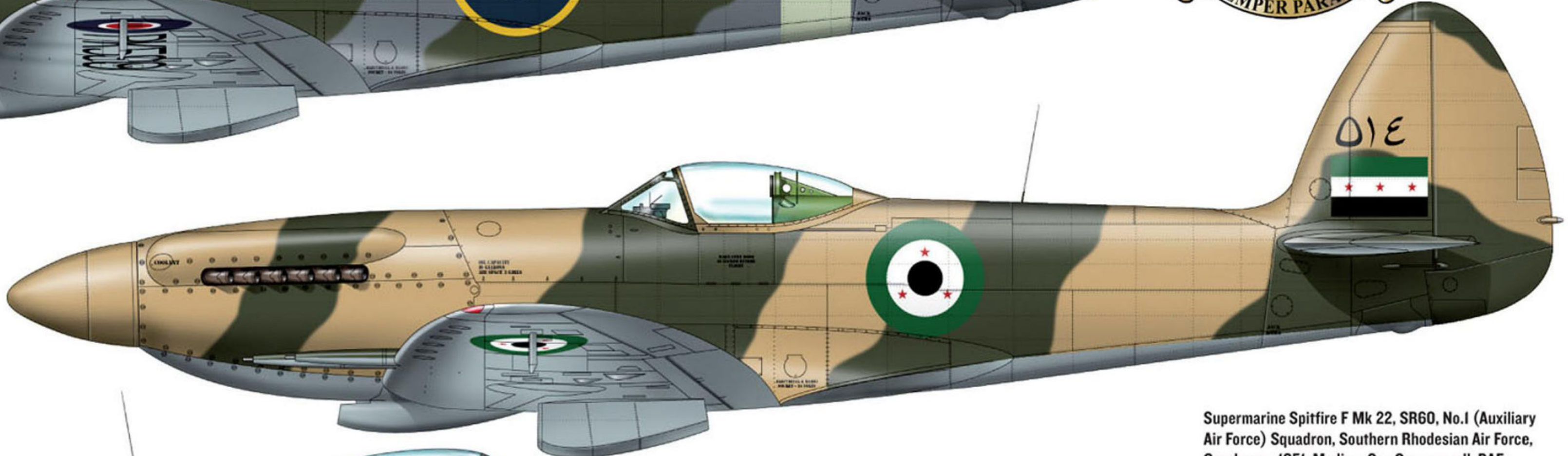
PROFILES 1:48 Scale 0 feet 3 6

Supermarine Spitfire F Mk 22, PK599, RAT•K, No.613 (City of Manchester) Squadron RAuxAF, 1949. Ocean Grey/Dark Green upper surfaces with Medium Sea Grey undersides; Sky spinner and rear fuselage band. Codes in white, serial in black, repeated below the wings; unit crest on fin

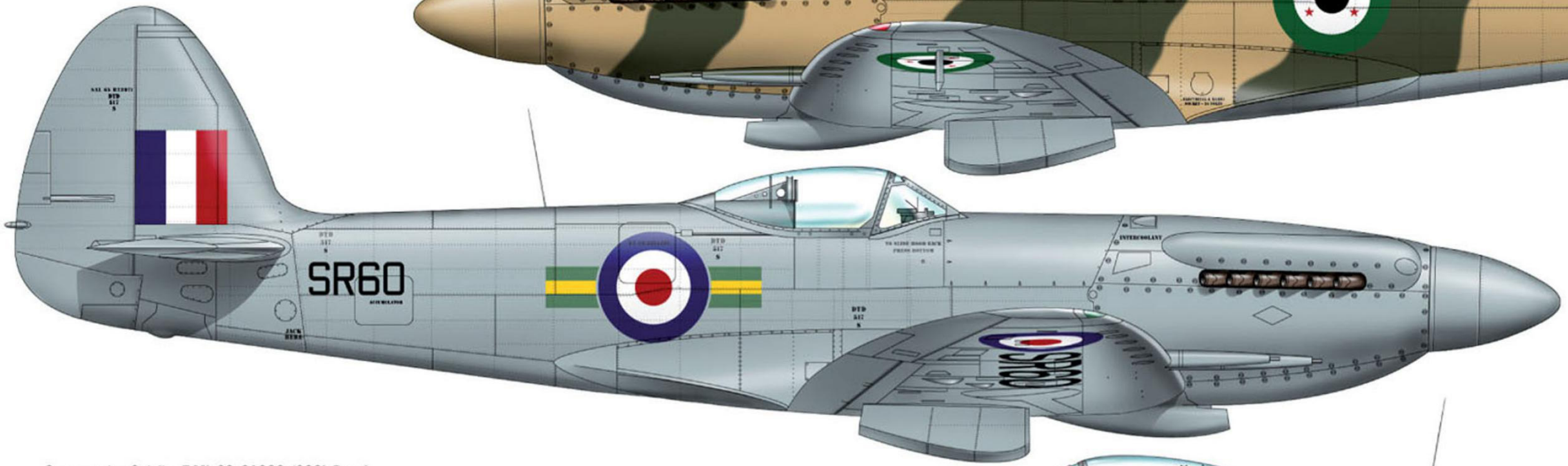


Model AIRPLANE INTERNATIONAL Original Artwork by Richard J. Caruana © MAI 2011

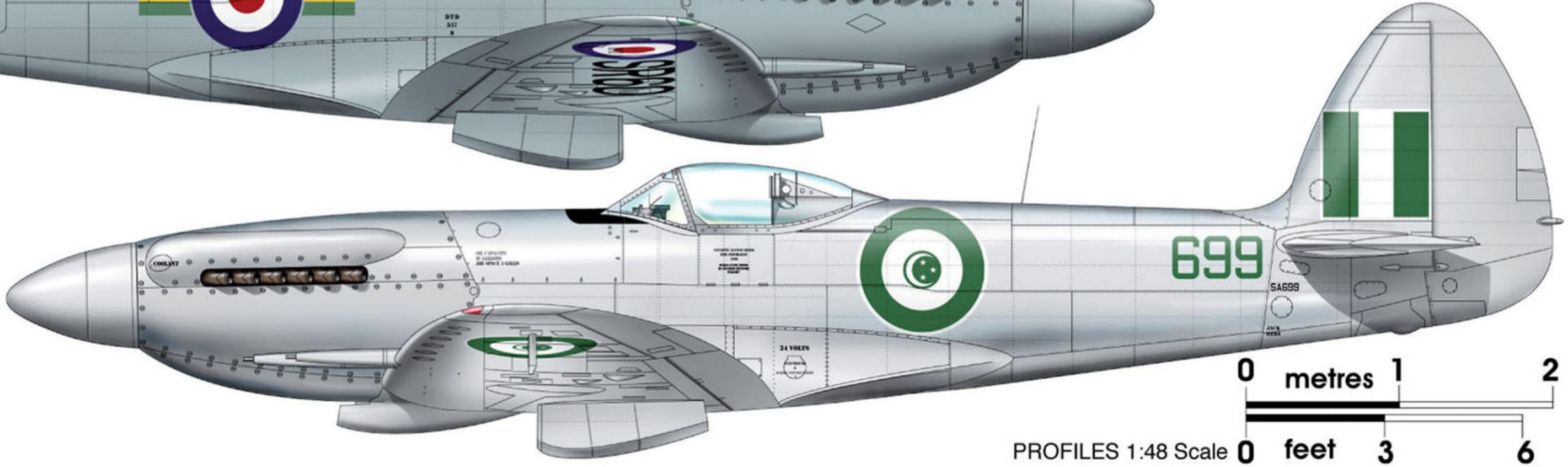
Supermarine Spitfire F Mk 22, '514', Syrian Air Force. Light Stone/Dark Green upper surfaces with Medium Sea Grey undersides; national markings in six positions. Serial in black on fin



Supermarine Spitfire F Mk 22, SR60, No.1 (Auxiliary Air Force) Squadron, Southern Rhodesian Air Force, Cranborne, 1951. Medium Sea Grey overall; RAF roundels in six positions with those on fuselage sides being flanked by green and yellow bars. Serial in black, repeated below both wings



Supermarine Spitfire F Mk 22, SA699, '699', Royal Egyptian Air Force, recorded staging through Malta in 1950. Silver overall with a small black anti-dazzle panel ahead of the windscreen; '699' on rear fuselage in green; all national markings outlined in white. Fin flash is also out- lined in white; 'SA699' in small lettering below tailplane



PROFILES 1:48 Scale

GLOSTER'S MEATBOX

A camouflaged Meteor F Mk 8, WA981, 'F', of No.74 Squadron photographed at Horsham St Faith on 15 September 1956. Note the distinctive yellow/black stripes flanking the fuselage roundel (R.J. Caruana)

The Meteor F Mk 8 (Gloster G.41K) was the most representative of this jet fighter's long line of versions and may also be considered as the ultimate fighter version. It was also the only version of the Meteor to be blooded in action. Between 1950 and 1955 it constituted the backbone of the Royal Air Force (RAF), and later with the Royal Auxiliary Air Force (RAuxAF), not to mention the important status it earned with a great number of foreign air arms.

This version of the Meteor represented a progressive improvement of airframe married to a relatively faster improvement in power plants. Earlier version of the Meteor carried an amount of dead weight to compensate for centre of gravity deficiencies. The most logical way to rectify this problem was by extending the front fuselage and, at the same time, increase the area aft of the cockpit for the carriage of additional fuel.

Meteor F Mk 4 RA382 was given a 30in. (762mm) extension between the existing front-to-centre fuselage break bulkhead. This balanced the Meteor when fully loaded, but it was found that with the expenditure of some 800lb (360kg) of ammunition from the nose section pitch problems reappeared, resulting in a pitch-up attitude and studies to overcome this were concentrated on the redesign of the tail unit. An ideal solution was already in Gloster's hands by adopting the fin and tailplane design of a projected single-engined aircraft, the E.1/44. This very simple modification to the Meteor's ailment required minimum modification, such as the substitution of the top wooden section of the E.1/44's tail with a metal section.

Experience gained on RA382 was passed on to the true prototype, VT150 (also an ex-Mk 4). In this form it took to the air for the first time on 12 October 1948. Handling improved considerably over that of earlier versions and, as a bonus, performance increased dramatically. However the airframe required strengthening to meet the stress induced by the improved performance. Power for the F Mk 8 was provided by a pair of Rolls-Royce Derwent 8s that provided 3,500lb (1575kg) thrust. The canopy of VT150 was modified further with the introduction of a fully blown transparent unit. Although the rear metal fairing had been eliminated on the prototype, it continued to appear on a number of early production examples. Most important of all, the long-awaited introduction of an ejector seat was finally achieved.

Meteor F Mk 8 production was immediately taken in hand. Some 1,183 examples for the RAF were to be produced, with initial deliveries going to No.43 Squadron on 2 August 1949. However the first aircraft on the production line (VZ438) went to No.1 Squadron on 10 December of that same year. No.245 Squadron at Horsham St Faith was to become the first fully operational unit on this version of the Meteor on 29 June 1950, thus beginning a long association with the type that was to last up to April 1957. WH398 was to become the last operational F Mk 8 with the RAF, leaving Singapore in 1962 after it had been operating from Seletar since 1954.

EXPERIMENTAL Mk 8s

The list of experimental Meteors F Mk 8 is extensive; the following deserve special mention:

- **VT150:** Prototype F Mk 8. Later test included spin parachute installation designed for the Javelin.
- **VZ438:** First production aircraft used for FR Mk 9 development test at Farnborough. Used for conversion trials to TT Mk 8 configuration (a number of F Mk 8s were converted to target tugs as TT Mk 8s after retirement from regular service).
- **VZ439:** High altitude tests with strengthened canopy.
- **VZ460:** Underwing bomb and rocket pylon acceptance trials; spring tab ailerons; went to the Central Fighter Establishment (CFS).
- **VZ468:** London-Copenhagen record flight.
- **VZ500:** Auto-stabiliser trials.
- **VZ517:** Used by Rolls Royce (Hucknell) for surge tests on the Derwent 8 and later tested with an Armstrong Whitworth Screamer rocket engine.
- **VZ657:** Used for trials to investigate the damage caused to the belly tank by spent cannon cartridges.
- **VZ442:** Canopy fastenings trials.
- **WA775:** Nose radar for Firestreak missile guidance (for the Hunter).
- **WA820:** Most powerful Meteor ever built, fitted with two AW Sapphire engines of 7,600lb (3420kg) thrust each. Airframe and engine nacelles highly modified.
- **WA823, WA828-WA830, WA832, WA834, WA837, WA936, WA941, WA946, WA952:** Used for probe and drogue flight-refuelling trials.
- **WA982:** Fitted with Rolls Royce Soar lightweight engine at port wingtip; the starboard unit originally fitted was a dummy, later also fitted, making it a four-engined Meteor!
- **WE855:** Over-run airfield barrier tests.
- **WH301:** Converted to advance trainer configuration. Several F Mk 8s similarly converted becoming T Mk 8s.
- **WH483:** Spring loaded tab aileron trials for improved manoeuvrability.
- **WK935:** Also known as the 'Prone Meteor' due to the addition of a prone position in the lengthened nose, for the Bristol 185 rocket interceptor project.
- **G-AMCJ:** Private venture ground attack version with RATOG, underwing stores and tip tanks.

THE METEOR GOES TO WAR

Although the Gloster Meteor had seen limited action during the last few months of World War Two, it was the Royal Australian Air Force (RAAF) that took it into aerial combat for the first time. The United States Air Force (USAF) found itself heavily committed in Korea both regard personnel and material. Although the F-86 Sabre had already made its mark in the air battles over North Korea, production at that stage could not permit its supply to other air arms engaged in the fighting. P-51 Mustangs were the mainstay of the RAAF's contribution in that theatre of operations until the urgent need for modernisation was filled with the arrival of the Meter.

A hundred Meteors were shipped to Australia in February 1951, 97 of which were F Mk 8s and three were T Mk 7 two-seater trainers. These went to re-equip No.77 Squadron (RAAF) and following a short work-up period at Iwakuni, in Japan, the unit flew its first operational sorties in Korea on 29 July 1951. The squadron was under the command of Sqn Ldr Pete Crosswell, and included within its flying personnel six experienced RAF pilots. Of the British pilots, Flg Off Berg was shot down by a MiG-15 and captured while Flt Sgt Lamb was killed in August in a mid-air collision. The first MiG kill by No.77 Squadron was recorded on 1 December 1951.

Misgivings about the Meteor's suitability for the type of operations to which it had been committed were confirmed on 29 August when during a sweep over Chongju, the F Mk 8 proved no match to the far superior MiG-15. A77-21 was lost that day, and after another rough brush with MiGs the following week, 'MiG Alley' was declared a prohibited zone for the squadron. Tactics changed as Meteor pilots concentrated on fighter sweeps and bomber escort duties, however keeping well to the south of the Chongchan River. During a fierce battle on 1 December, three Meteors were lost (A77-29, -251, -949); Aussie pilots claimed three MiG kills in return.

Meteors were relegated to point defence duties in South Korea. By that time it became clear that the Meteor was outclassed and its role was changed to that of ground attack. On 8 January 1952, No.77 Squadron flew its first Meteor ground attack sortie against Chongdan. This was followed by no less than 1,773 sorties by the end of February, during which four pilots were lost. Ground attack missions were successful mainly due to the near total lack of enemy opposition. Originally use was made of 60lb HE rockets although Napalm bombs were also fitted later on. The Meteor's ruggedness more than compensated for its initial failure as it often managed to limp back to base with battle damage that would have proved fatal to any other aircraft. It was also found to be ideal in operations from hastily prepared strips or rough landing grounds.

In May 1952, No.77 returned to fighter sweeps with the last MiG combat being recorded in March of the following year,

when Sgt J. Hale was awarded another kill. The war ended on 27 July 1953. 18,872 sorties had been flown during which 54 Meteors and 32 pilots were lost. Three confirmed MiG kills appears to be a rather poor record in comparison. However, the damage inflicted on enemy ground positions by RAAF Meteors more than make up for the apparent imbalance.

EXPORTS

On its return to Australia, No.77 Squadron exchanged its Meteor for CAC-built F-86 Sabres. Most Meteors were then relegated to the training role. Other RAAF units to operate the Meteor were Nos.22 and 23 Squadrons, and No.75's three-ship aerobatic team known as the 'Meteorites'. Some F Mk 8s were eventually converted to pilotless drones as U Mk 16, 21 and 21A, or as target tugs.

Belgium exchanged its Meteors F Mk 4 for F Mk 8 during 1949 and eventually become the largest operator of the Meteor outside Britain. The first batch was formed of 23 ex-RAF machines serialled EG-201 to EG-223. Avions Fairey built a second batch of 150 examples (serials EG-1 to EG-150) under licence. These were assembled from components supplied by Fokker and the Fabrique Nationale Belge that also produced the Derwents. A further 67 examples were built later on – starting with EG-224 – in two batches of 30 and 37 respectively. These Meteors were operated by the 1st, 7th and 9th Wings of the Belgian Air Force until replaced by Hawker Hunters F Mk 4 and Republic F-84F Thunderstreaks.

Brazil received 60 examples (four of which came from ex-RAF stocks) that replaced the P-47 Thunderbolts in service with the two Squadrons of 1° GavCa, as from 23 October 1953. Serials were 4400 to 4459. Most Brazilian Meteors carried highly decorative and colourful markings, with the first squadron being identified by a blue trim, the second carried a similar scheme with red trim. Originally they were delivered with the metal rear section to the canopy. However fully transparent canopies were supplied and installed by the end of 1957. An additional Meteor F Mk 8 (4460) was built from spares available by Parque de Aeronautica of Sao Paolo. This particular Meteor went to 1o GAvCa to be used as a target tug; eventually it was taken to the Museu Aerospacial for preservation on 22 April 1974. Meteors F Mk 8 were grounded due to metal fatigue only on 24 April 1965 when a number of flight restrictions were issued by Hawker Aviation Ltd. (this company having absorbed Gloster Aircraft Company) on all Meteors until a full inspection of the airframes had been made. The number of airworthy Meteors was drastically reduced until slowly retired from service between 1966 and 1968.

Denmark ordered 20 examples (481-500) in April 1950, the first being delivered in January of the following year. Esk.724 was formed, at first flying Meteors F Mk 4 on loan from Esk.723, until the arrival of the first four F Mk 8s on 15 January 1951. By the end of March, enough F Mk 8s had arrived for Esk.724 to hand over the F Mk 4s back to their former owners and on 4 June deliveries of the new Meteors had been completed. On 16 June 1952, the unit moved to Alborg and in June 1954 all remaining F Mk 4s, T Mk 7s and F Mk 8s were integrated into Esk.724. On 12 March 1956, Esk.724 was reformed into two flights, one flying the Hawker Hunter, the other the Meteor F Mk 8, although initially both flew the Meteor until the Hunters had all been delivered. This arrangement did not last long, as on 27 June the 17 Meteors F Mk 8 still in service were retired; six were taken into storage while the others were distributed to various station flights for target-towing and liaison duties.

In October 1949, Egypt ordered 19 Meteors F Mk 8 with a second batch of five the following December. Delivery of these aircraft was stalled by an arms embargo and work on this contract was suspended. When the embargo was eventually lifted seven aircraft were delivered in December 1952. The remaining 12 of the original contract did not reach Egypt until 1955. In all, 22 examples were delivered.

On the other side of the coin Israel was flying the F Mk 8, eleven examples having been ordered in February 1953. These were fitted with cannon armament supplied by Israel and HVAR rocket projectiles. Apart from their normal fighter role these aircraft could be easily converted to act as target tugs if required. Israeli Meteors were serialled 2166 to 2169 and 2172 to 2178, and were eventually replaced in IAF service with the Dassault Mystere.

Syria ordered twelve F Mk 8s in 1950 (101 to 112). WK814 to WK817, 824 to 827, and WK862 to 865 were originally marked for delivery but were diverted to the RAF due to the 1951 arms embargo. The ordered Meteors were delivered during the following year from ex-RAF stocks supplemented, in 1956, by a further seven examples.

The Royal Netherlands Air Force (RNAF) started to exchange its F.Mk 4s for F Mk 8s in January 1951. An original batch of five was supplied directly by Gloster from ex-RAF stocks. Fokker began licence production of 155 Meteors F Mk 8, sub-contracting considerable work to Avialanda and De Schelde. The first order for 50 examples was placed on 21 April 1949 to be assembled by Fokker from components supplied by Glosters, delivering its first example on 12 January 1951. The last, and 155th, Meteor F Mk 8 for the RNAF (I-255) was completed by Fokker on 15 February 1956. Apart from this considerable licence production for home use, Fokker also delivered 145 F Mk 8s to Belgium and 30 sub-assemblies for construction in Belgium by Faireys. The RNAF Meteors F Mk 8 served with the following units (unit codes in parenthesis): No.322 (3W), No.323 (9Y), No.324 (3P), No.325 (4R), No.326 (9I), No.327 (7E) and No.328 (8S) Squadrons, and were retired from service in 1956.

MIDDLE EAST OPERATIONS

Following the supply of Meteors and Vampires to Egypt, the Israeli Government sought the purchase of similar equipment from Britain, and on 23 November 1952 approved a deal for the procurement of 11 Meteors F Mk 8 and four T Mk 7 two-seaters. The No.117 Hasilon Harishona (First Jet) Squadron was formed on 7 June 1953 under the command of Maj Menahem Bar awaiting its Meteors, the first of which arrived on 21 August. The first four pilots began their conversion course at Ramat David airbase in September and until 1955 117 Squadron was the only unit operating the Meteor F Mk 8 with the Israeli Air Force. As tensions mounted in the Middle East, the squadron was placed on continuous standby and in July 1954 two Meteors were scrambled to check the presence of Egyptian Hawker Furies seen flying close to Israel's southern border. However, no contact was made.

Following incursions by the Egyptian Air Force into Israeli territory, No.117 deployed eight of its Meteors to Hazor on 18 August 1955, and two days later a pair of Israeli F Mk 8s engaged four Egyptian Vampires over the Negev Desert. On 1 September, two Meteors (an F Mk 8 and a PR Mk 9) intercepted four Vampires near Nitzana. Cpt Aaron Yoali fired a cannon burst from a range of 400m, sending down one of the Egyptian jets in flames with another falling to his guns a short while later. These were to become the first jet fighter kills in the Middle East.

Operation 'Kadesh' was launched on 29 October 1956, as Israel's contribution to the Suez Campaign. Although originally calling for the use of the Meteors to attack Cairo-West airport during its initial phase, orders were changed so that the jet fighters would assist ground forces in Sinai. Apart from participating in the air fighting, the Israeli F Mk 8s managed to destroy an Egyptian radar station on 31 October. Two days later they participated in the capture of the Gaza Strip and the destruction of the 8th Palestinian Division, on the day that the Meteor recorded its highest number of operational sorties. No record exists of Meteor-versus-Meteor encounters during this period, although one Egyptian Meteor was reported lost to an Israeli Mystere on the second day of fighting.

The simple but sound layout of the Meteor was invaluable in the rapid development of the revolutionary jet turbine. It is no small credit to its designer, George Carter, and especially to his foresight that new or developed versions of jet engines could be very simply installed in the Meteor without the need for major redesign; the Meteor F Mk 8 is a case in point. It was only when engine development outstirpped the Meteor's capabilities that new aircraft began to emerge. Still, the Meteor saw during its lifetime a metamorphosis difficult to find in any other aircraft of the immediate post-war era — from the small F Mk I to the two-seat, long-nosed radar-equipped NF Mk 14. The type is well represented by a good number of survivors in museums to this day, not to mention a few examples that are still flying and thrilling airshow crowds with its distinctive 'blue note'.

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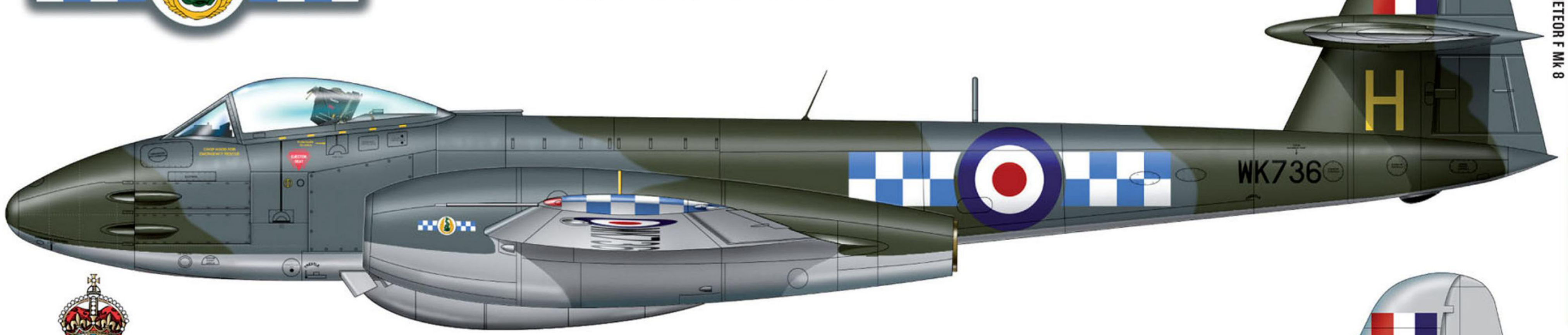
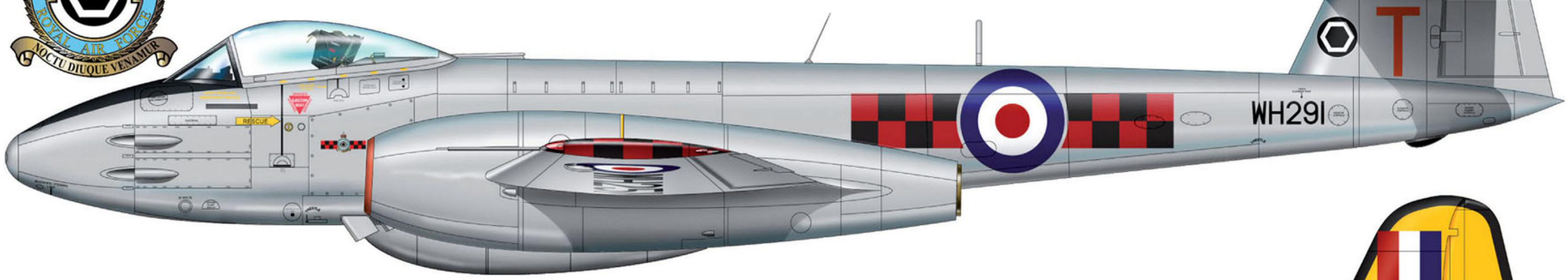
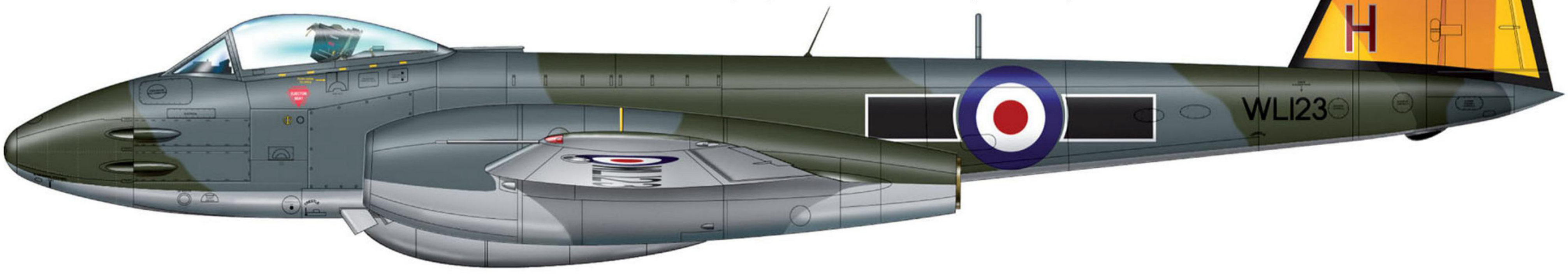
Favourable weather and long daylight hours attracted a number of RAF and RAuxAF squadrons to Malta for training. An example from No.616 (South Yorkshire) Squadron is here seen at Ta' Qali; fuselage markings consisted of a green bar with yellow diamonds (R.J. Caruana)



Gloster Meteor F Mk 8, WK736, 'H', No.19 Squadron RAF, Leconfield, 1956. Dark Sea Grey BS 381C-683 and Dark Green BS 381C-241 upper surfaces with Aluminium undersides. Code 'H' in yellow on fin, repeated on nose wheel door in black; blue/white checks on fuselage side flanking the roundel, wingtips and on engine cowlings, with the unit badge in the centre of the latter



Gloster Meteor F Mk 8, WH291, 'T', No.85 Squadron RAF. Aluminium (silver) overall with 'T' on fin and engine intake rims in Dayglo Orange; individual aircraft letter is repeated on the front nose wheel door. Small crest, with checks similar to those flanking the roundel, positioned on front fuselage beneath cockpit. Red/black checks on wing tips



Gloster Meteor F Mk 8, WL123, 'H', No.111 Squadron RAF, May 1958. Dark Sea Grey BS 381C-683 and Dark Green BS 381C-241 upper surfaces with Aluminium undersides; black bars, outlined in white, flanking fuselage roundels. Yellow tail section with vertical tail area outlined in black; red 'H', outlined in white. Note non-standard style of 'W' in fuselage serial

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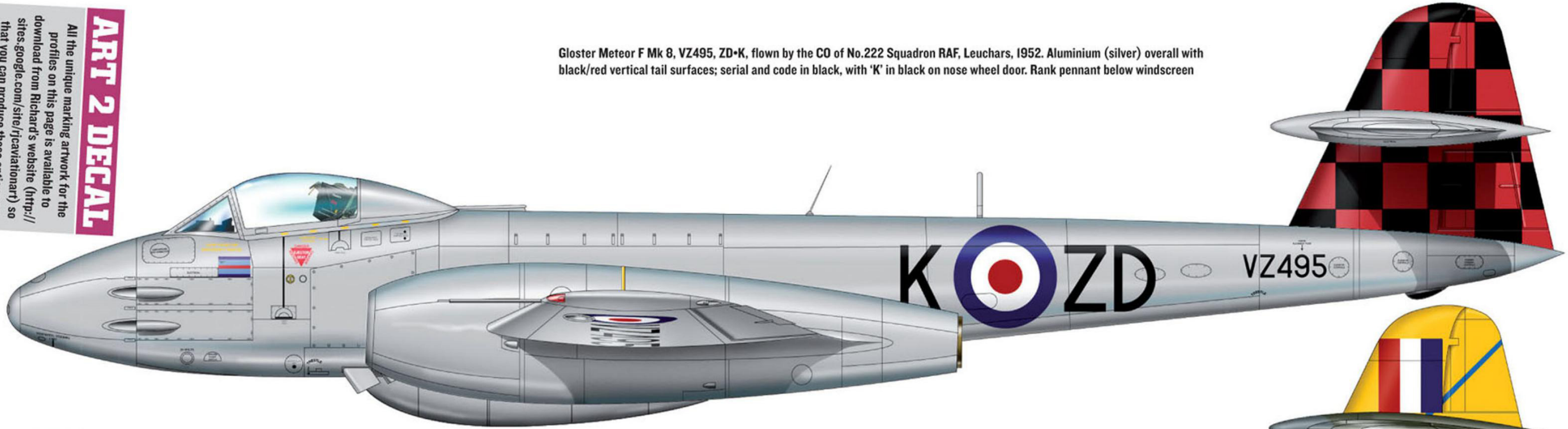
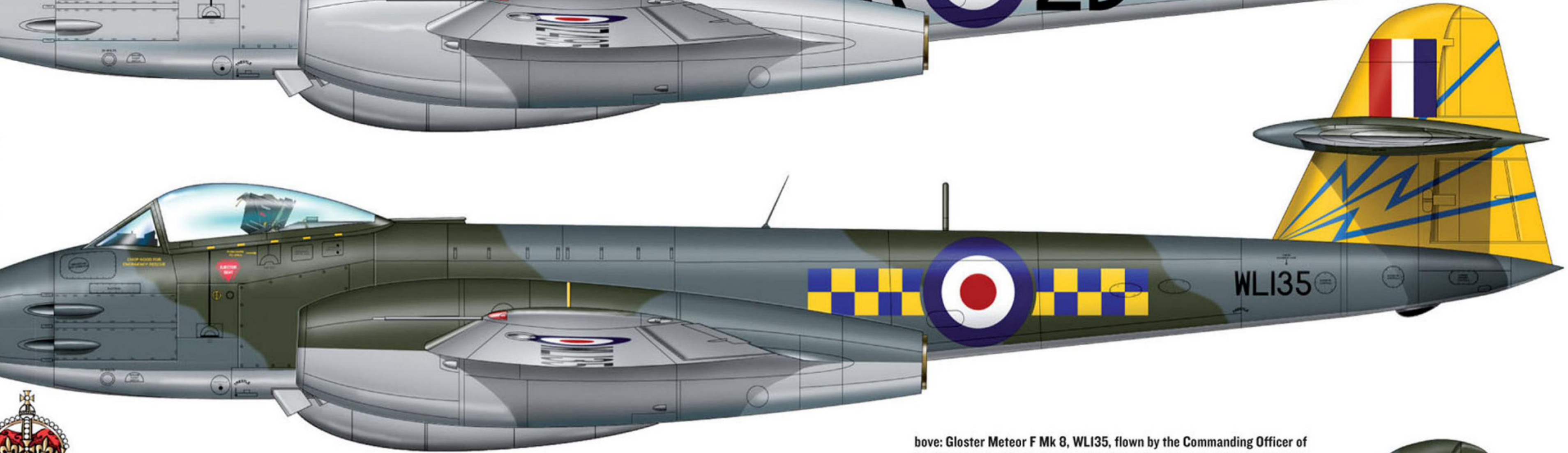
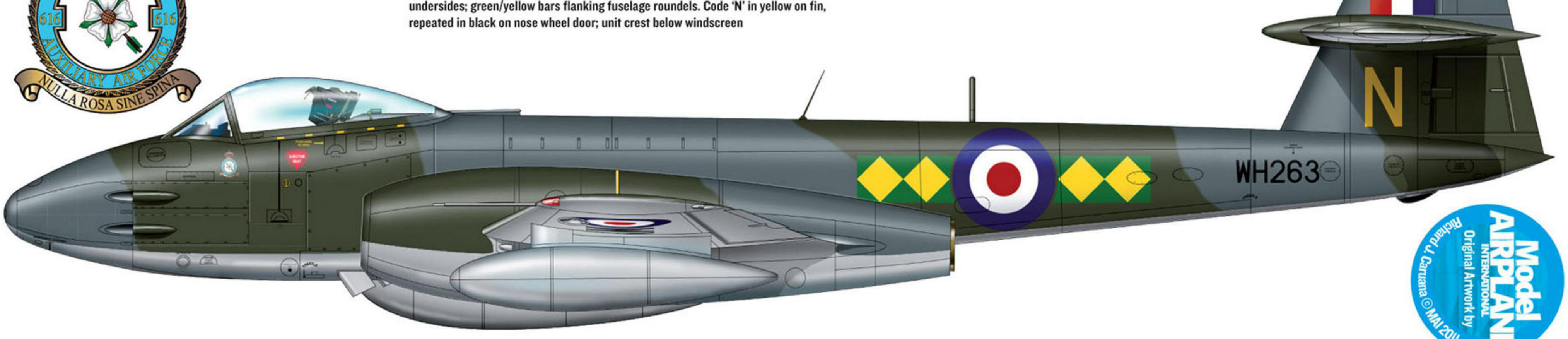
Gloster Meteor F Mk 8, VZ495, ZD•K, flown by the CO of No.222 Squadron RAF, Leuchars, 1952. Aluminium (silver) overall with black/red vertical tail surfaces; serial and code in black, with 'K' in black on nose wheel door. Rank pennant below windscreen





bove: Gloster Meteor F Mk 8, WL135, flown by the Commanding Officer of No.245 Squadron RAF, Horsham St Faith, 1954. Dark Sea Grey BS 381C-683 and Dark Green BS 381C-241 upper surfaces with Aluminium under-sides; blue/ yellow checks flanking fuselage roundels. Yellow vertical tail surfaces with blue flashes; rank pennant on nose wheel door

Below: Gloster Meteor F Mk 8, WH263, 'N', No.616 RAuxAF, Finningley. 1954. Dark Sea Grey BS 381C-683 and Dark Green BS 381C-241 upper surfaces with Aluminium undersides; green/yellow bars flanking fuselage roundels. Code 'N' in yellow on fin, repeated in black on nose wheel door; unit crest below windscreen



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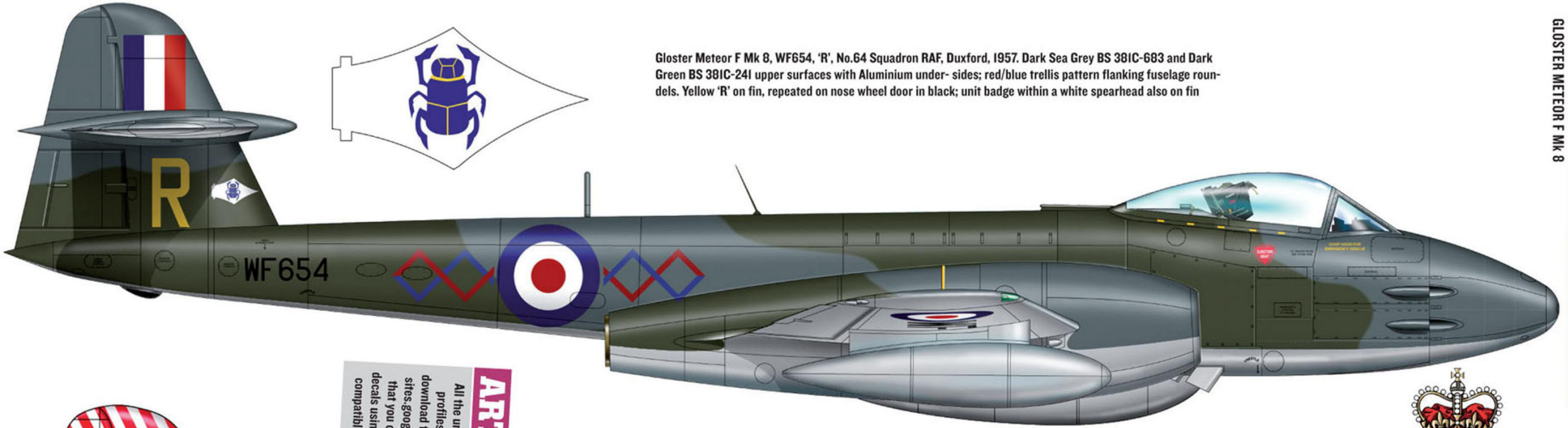

Gloster Meteor F Mk 8, WF654, 'R', No.64 Squadron RAF, Duxford, 1957. Dark Sea Grey BS 381C-683 and Dark Green BS 381C-241 upper surfaces with Aluminium under- sides; red/blue trellis pattern flanking fuselage roundels. Yellow 'R' on fin, repeated on nose wheel door in black; unit badge within a white spearhead also on fin

ART 2 DECAL

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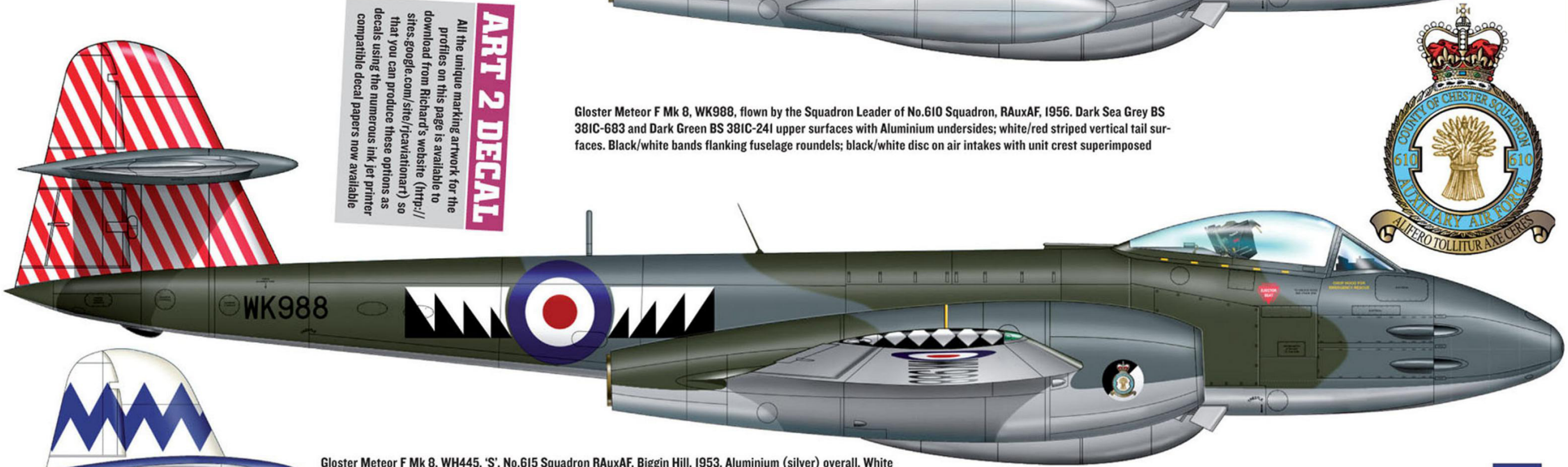
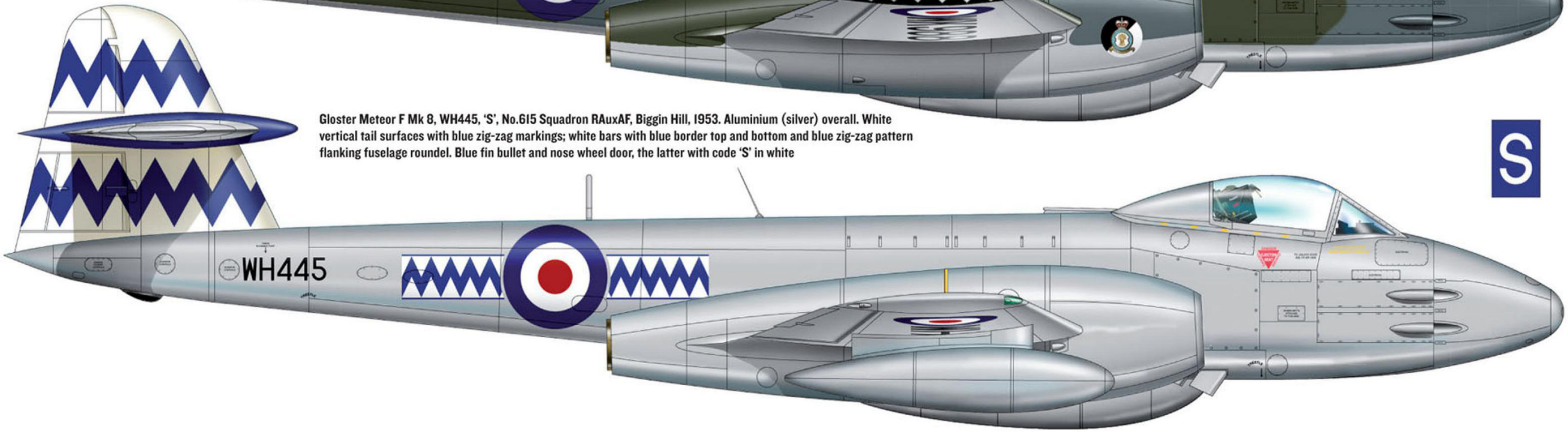
Gloster Meteor F Mk 8, WK988, flown by the Squadron Leader of No.610 Squadron, RAuxAF, 1956. Dark Sea Grey BS 381C-683 and Dark Green BS 381C-241 upper surfaces with Aluminium undersides; white/red striped vertical tail surfaces. Black/white bands flanking fuselage roundels; black/white disc on air intakes with unit crest superimposed



Gloster Meteor F Mk 8, WH445, 'S', No.615 Squadron RAuxAF, Biggin Hill, 1953. Aluminium (silver) overall. White vertical tail surfaces with blue zig-zag markings; white bars with blue border top and bottom and blue zig-zag pattern flanking fuselage roundel. Blue fin bullet and nose wheel door, the latter with code 'S' in white



Model Airplane International
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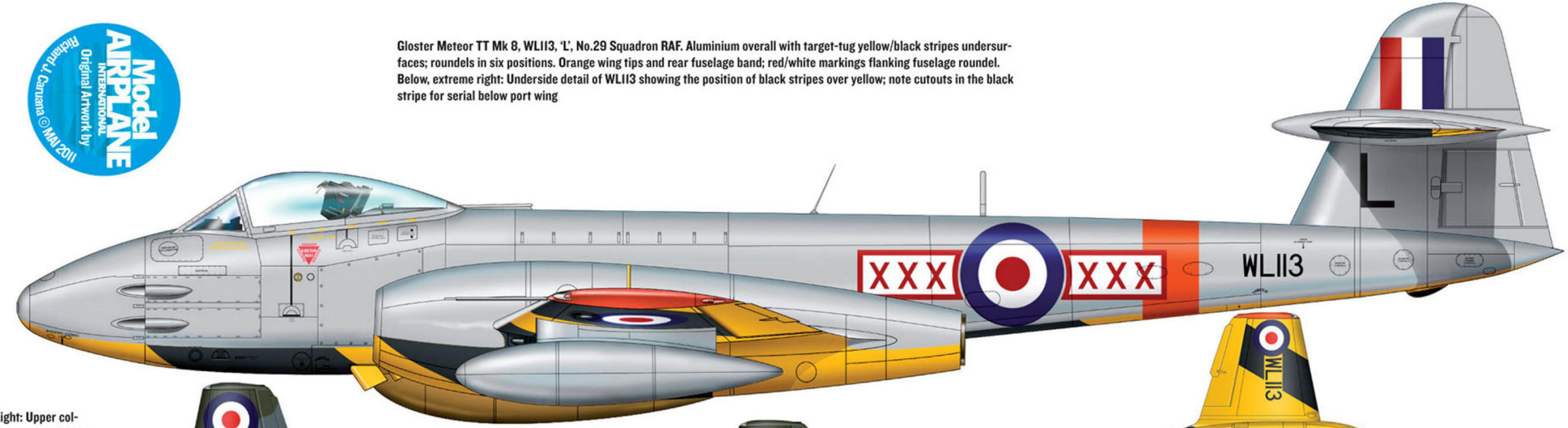
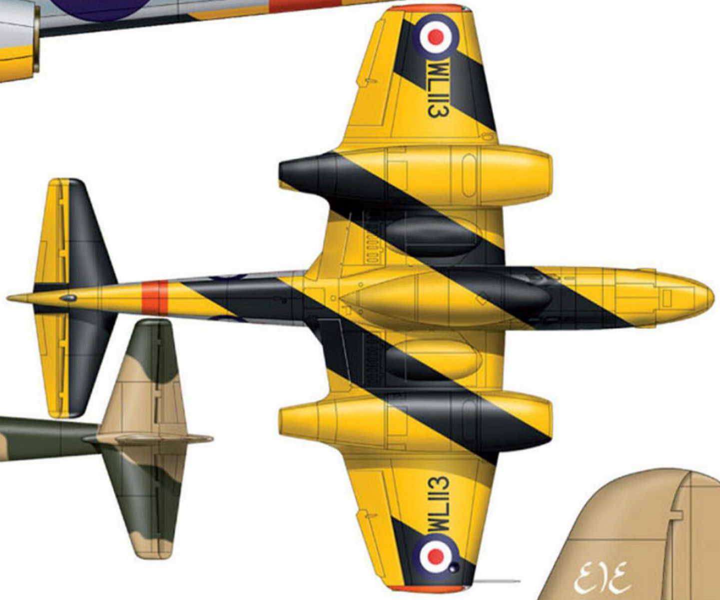
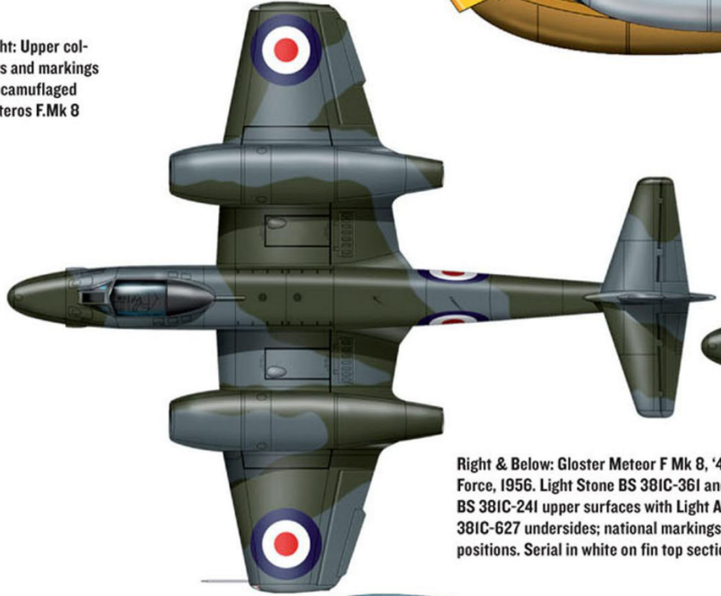
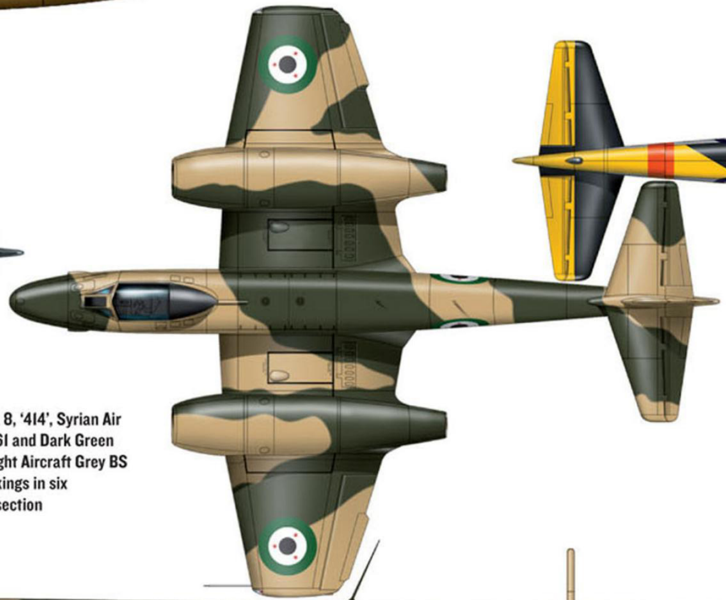
Gloster Meteor TT Mk 8, WL113, 'L', No.29 Squadron RAF. Aluminium overall with target-tug yellow/black stripes undersurfaces; roundels in six positions. Orange wing tips and rear fuselage band; red/white markings flanking fuselage roundel. Below, extreme right: Underside detail of WL113 showing the position of black stripes over yellow; note cutouts in the black stripe for serial below port wing



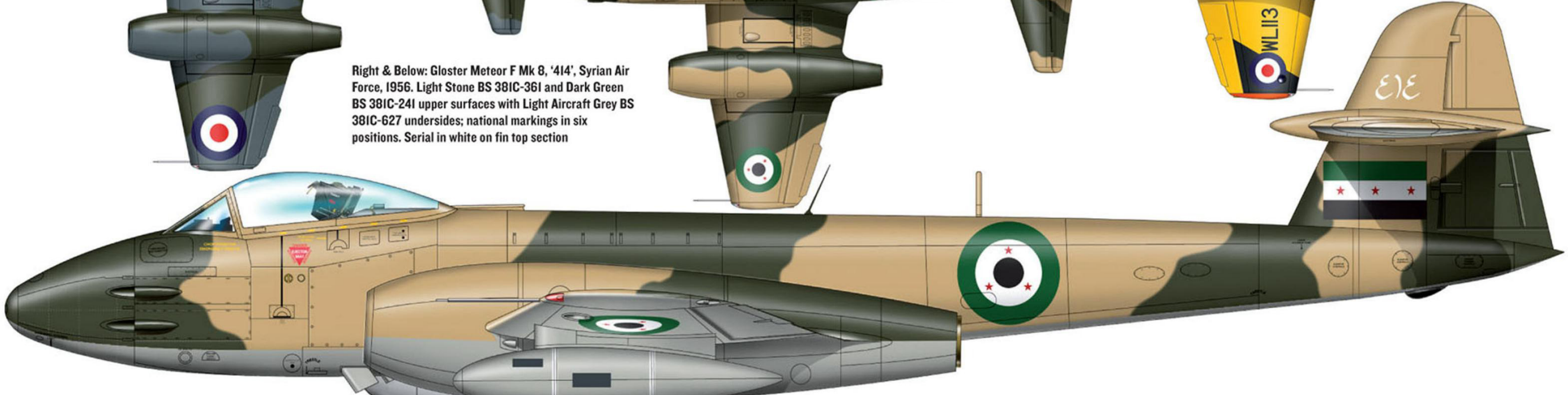


Right: Upper colours and markings for camuflaged Meteros F.Mk 8





Right & Below: Gloster Meteor F Mk 8, '414', Syrian Air Force, 1956. Light Stone BS 381C-361 and Dark Green BS 381C-241 upper surfaces with Light Aircraft Grey BS 381C-627 undersides; national markings in six positions. Serial in white on fin top section



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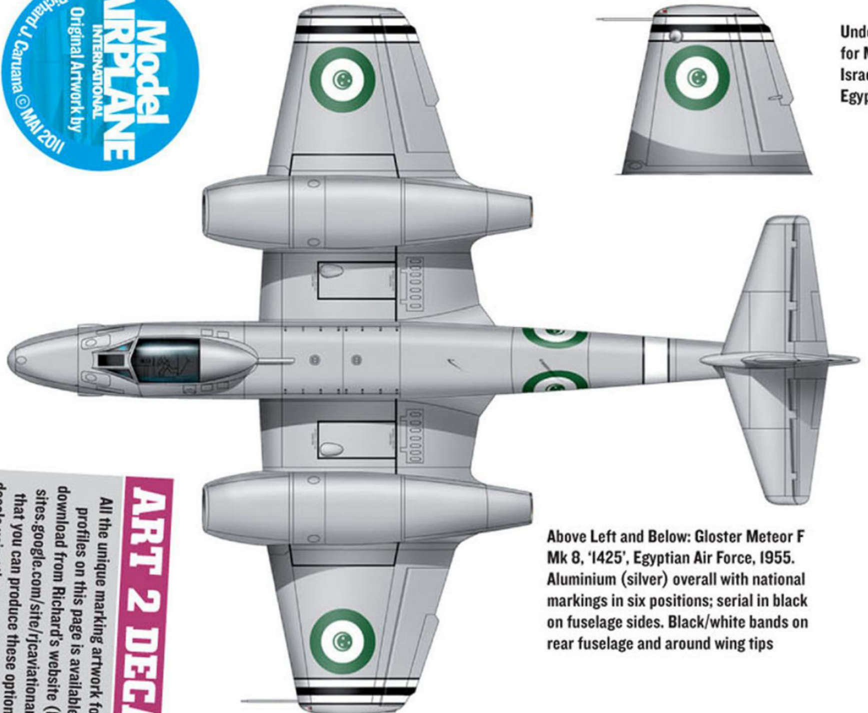
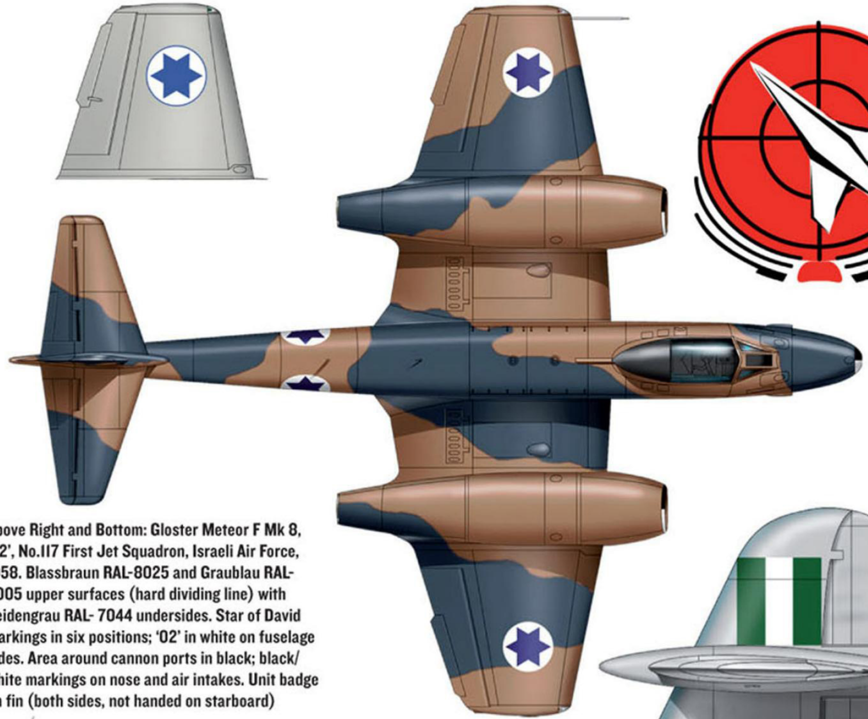
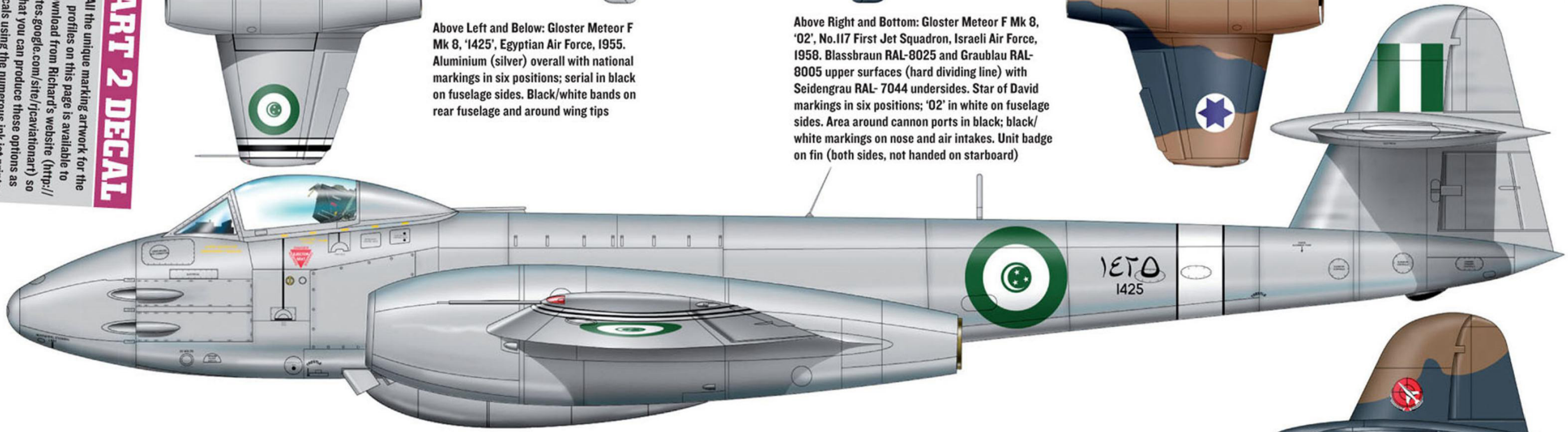


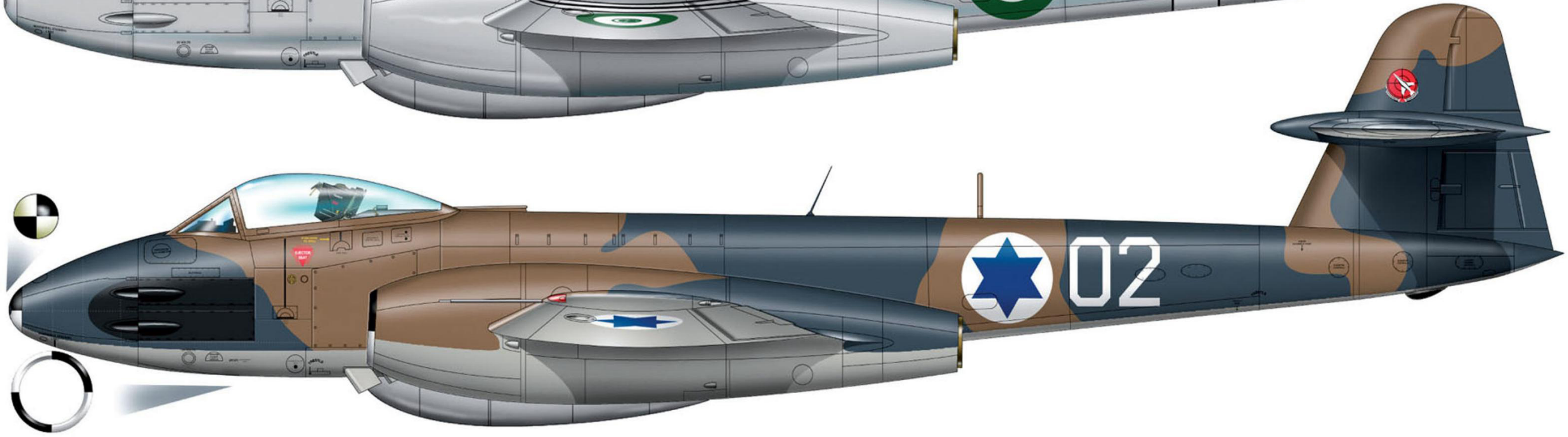


Underside marking details for Meteors F Mk 8 of the Israeli Air Force (right) and Egyptian Air Force (left)

Above Left and Below: Gloster Meteor F Mk 8, '1425', Egyptian Air Force, 1955. Aluminium (silver) overall with national markings in six positions; serial in black on fuselage sides. Black/white bands on rear fuselage and around wing tips

Above Right and Bottom: Gloster Meteor F Mk 8, '02', No.117 First Jet Squadron, Israeli Air Force, 1958. Blassbraun RAL-8025 and Graublau RAL-8005 upper surfaces (hard dividing line) with Seidengrau RAL- 7044 undersides. Star of David markings in six positions; '02' in white on fuselage sides. Area around cannon ports in black; black/white markings on nose and air intakes. Unit badge on fin (both sides, not handed on starboard)





ART 2 DECAL

All the unique marking artwork for the profiles on this page is available to download from Richard's website (http://sites.google.com/site/rjcaviationart) so that you can produce these options as decals using the numerous ink jet printer compatible decal papers now available

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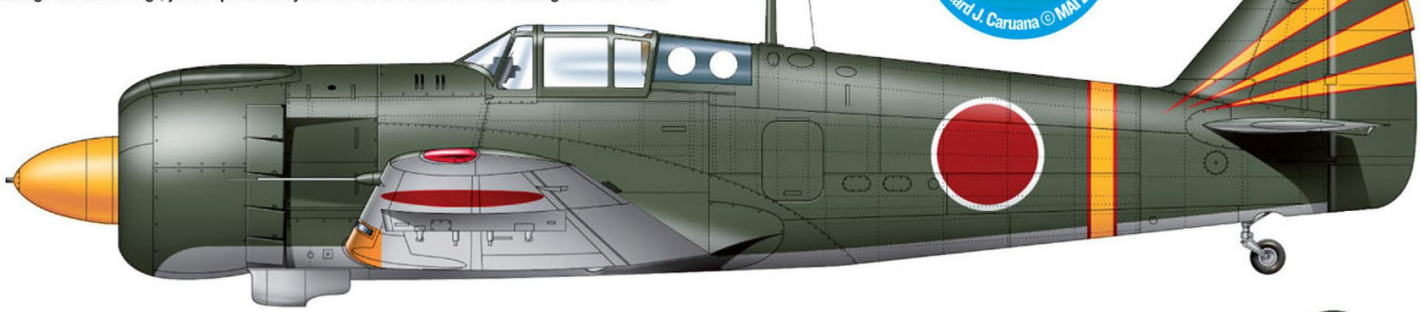
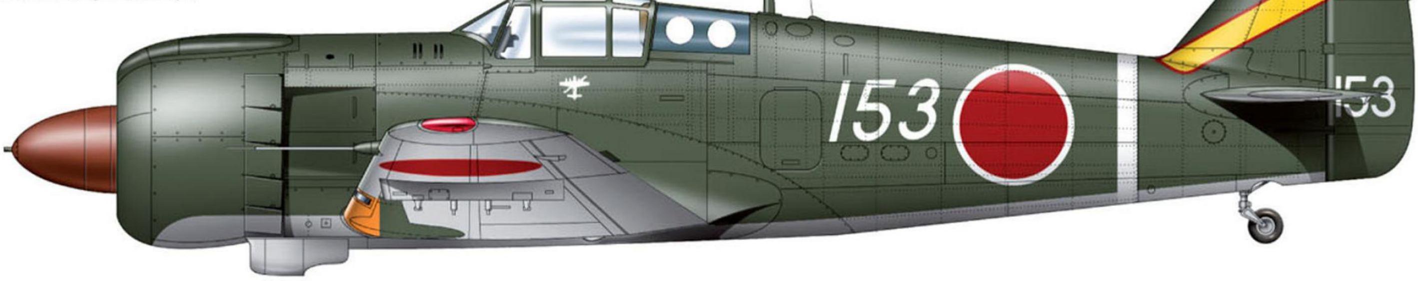
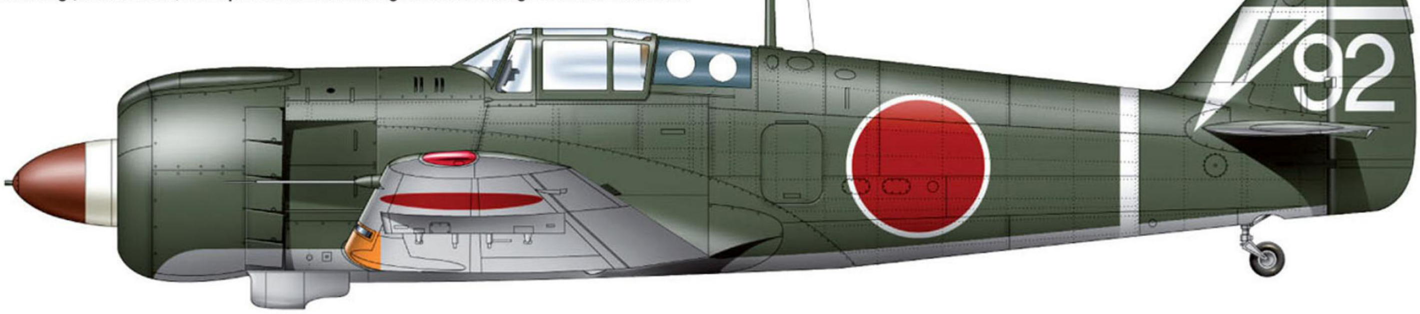
Kawasaki Ki-100-I-Kou, 3rd Chutai, 18th Sentai, Jashiwa, spring 1945. Dark Olive Green uppersurfaces with clear-doped natural metal undersides; Chrome Yellow wing leading edges. Hinomaru outlined in white on fuselage and above wings; yellow spinner and yellow bands and flashes on rear fuselage outlined in red



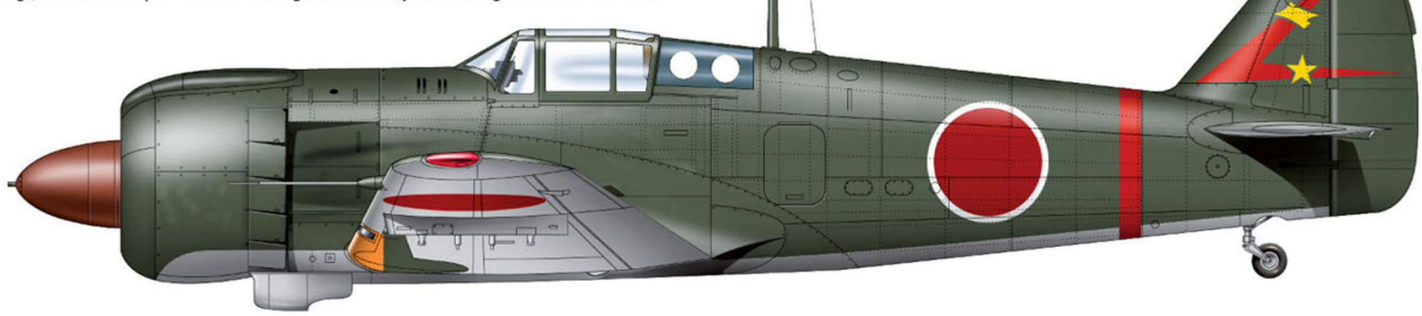
Kawasaki Ki-100-I-Kou, 59th Sentai, Japanese Home Islands Defence, Ashi ya (Fukuoka), summer 1945. Dark Olive Green uppersurfaces with natural metal undersides; Chrome Yellow wing leading edges. Hinomaru outlined in white on fuselage and above wings; yellow angled band on vertical tail surfaces, outlined in red. One kill marking below cockpit



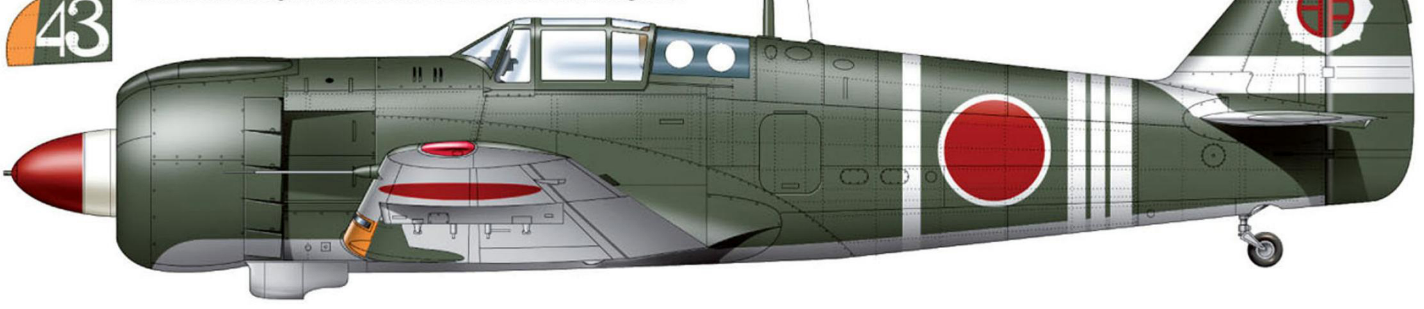
Kawasaki Ki-100-I-Kou, 5th Sentai, Nagoya Air Defence, spring 1945. Dark Olive Green uppersurfaces with clear-doped natural metal undersides; Chrome Yellow wing leading edges. Hinomaru outlined in white on fuselage and above wings; reddish-brown/white spinner. White rear fuselage band and markings on vertical tail surfaces



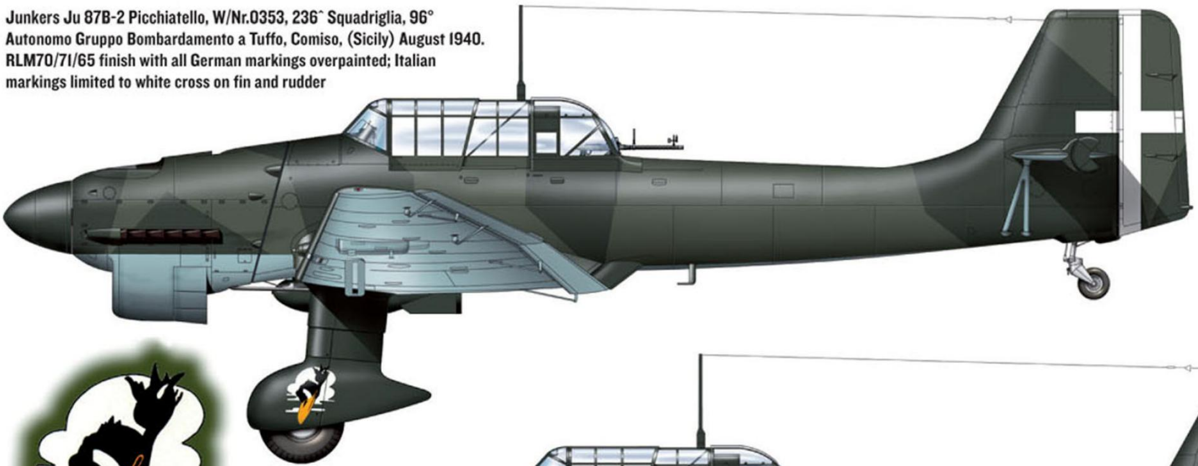
Kawasaki Ki-100-I-Kou, 2nd Chutai, 244th Sentai, spring 1945. Dark Olive Green uppersurfaces with clear-doped natural metal undersides; Chrome Yellow wing leading edges. Hinomaru outlined in white on fuselage and above wings; reddish-brown spinner. Red rear fuselage band and red/yellow markings on vertical tail surfaces

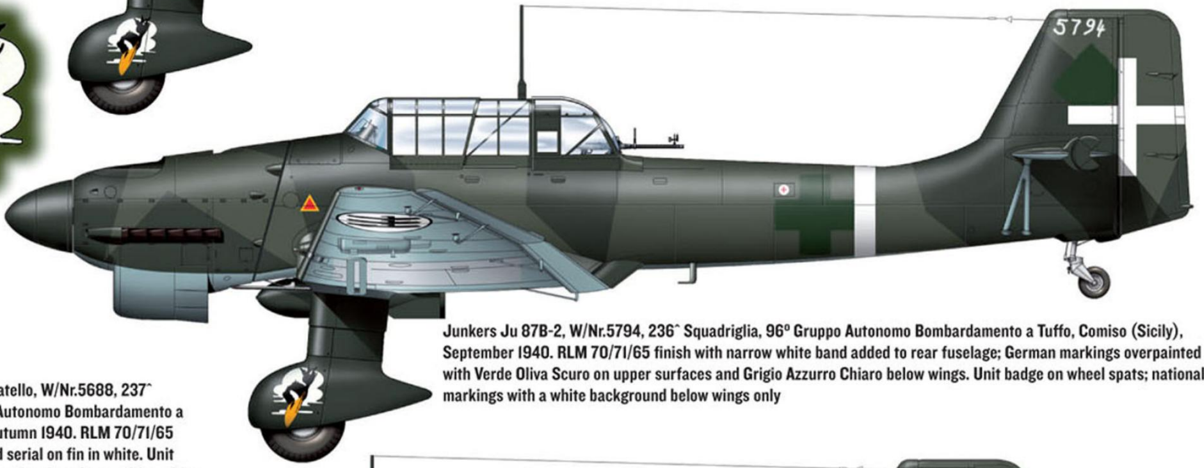


Kawasaki Ki-100-I-Kou, Akeno Flying School, July 1945. Dark Olive Green uppersurfaces with natural metal undersides; Chrome Yellow wing leading edges. Hinomaru outlined in white on fuselage and above wings; red/white spinner. White bands around rear fuselage and on vertical tail surfaces; unit badge on fin/rudder. White '43' on mainwheel undercarriage doors



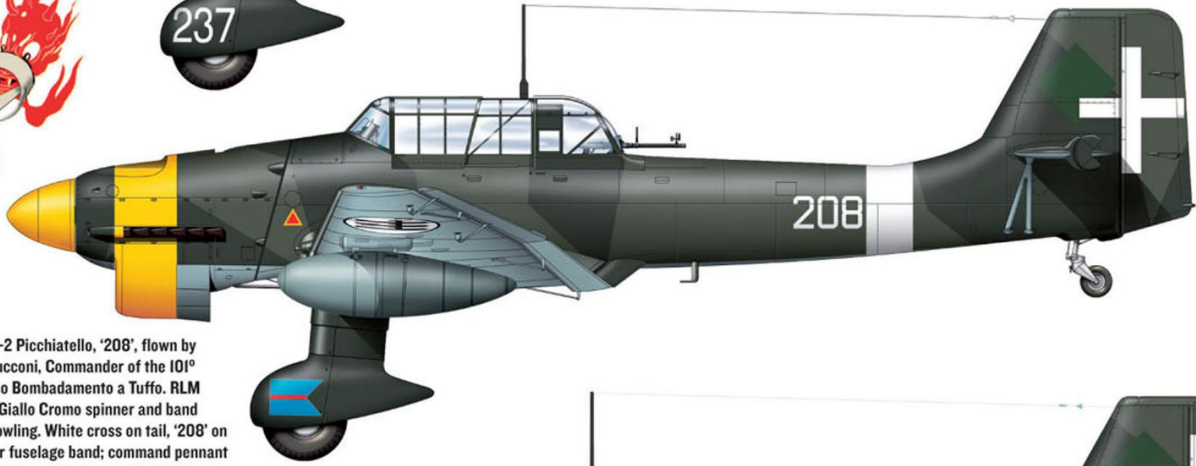
Junkers Ju 87B-2 Picchiatello, W/Nr.0353, 236^ Squadriglia, 96° Autonomo Gruppo Bombardamento a Tuffo, Comiso, (Sicily) August 1940. RLM70/71/65 finish with all German markings overpainted; Italian markings limited to white cross on fin and rudder





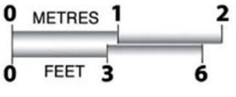
Junkers Ju 87B-2, W/Nr.5794, 236^ Squadriglia, 96º Gruppo Autonomo Bombardamento a Tuffo, Comiso (Sicily), September 1940. RLM 70/71/65 finish with narrow white band added to rear fuselage; German markings overpainted with Verde Oliva Scuro on upper surfaces and Grigio Azzurro Chiaro below wings. Unit badge on wheel spats; national markings with a white background below wings only

Junkers Ju.87B-2 Picchiatello, W/Nr.5688, 237^ Squadriglia, 96° Gruppo Autonomo Bombardamento a Tuffo., Comiso (Sicily), autumn 1940. RLM 70/71/65 finish; codes on spats and serial on fin in white. Unit badge on fuselage sides; national markings with a white background below wings only



Junkers Ju-87R-2 Picchiatello, '208', flown by Capitano Raul Zucconi, Commander of the 101º Gruppo Autonomo Bombadamento a Tuffo. RLM 70/71/65 finish; Giallo Cromo spinner and band around engine cowling. White cross on tail, '208' on fuselage and rear fuselage band; command pennant on wheel spats. National markings with a white background below wings only

Junkers Ju-87B-2 Picchiatello, '208'/'4', 208^ Squadriglia, 101º Gruppo Autonomo Bombadamento a Tuffo, Sicily, April 1941. RLM 70/71/65 finish; dark green roughly brushed on undersides. Giallo Cromo spinner and band around engine cowling. Red '4' on wheel spats; white cross on tail, '208' on fuselage and rear fuselage band; national markings with a white background below wings only



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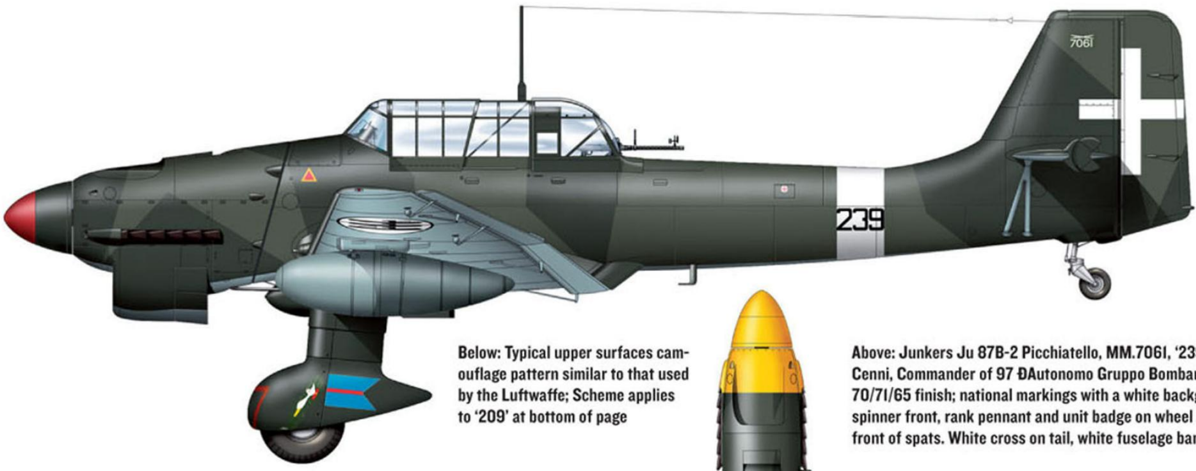
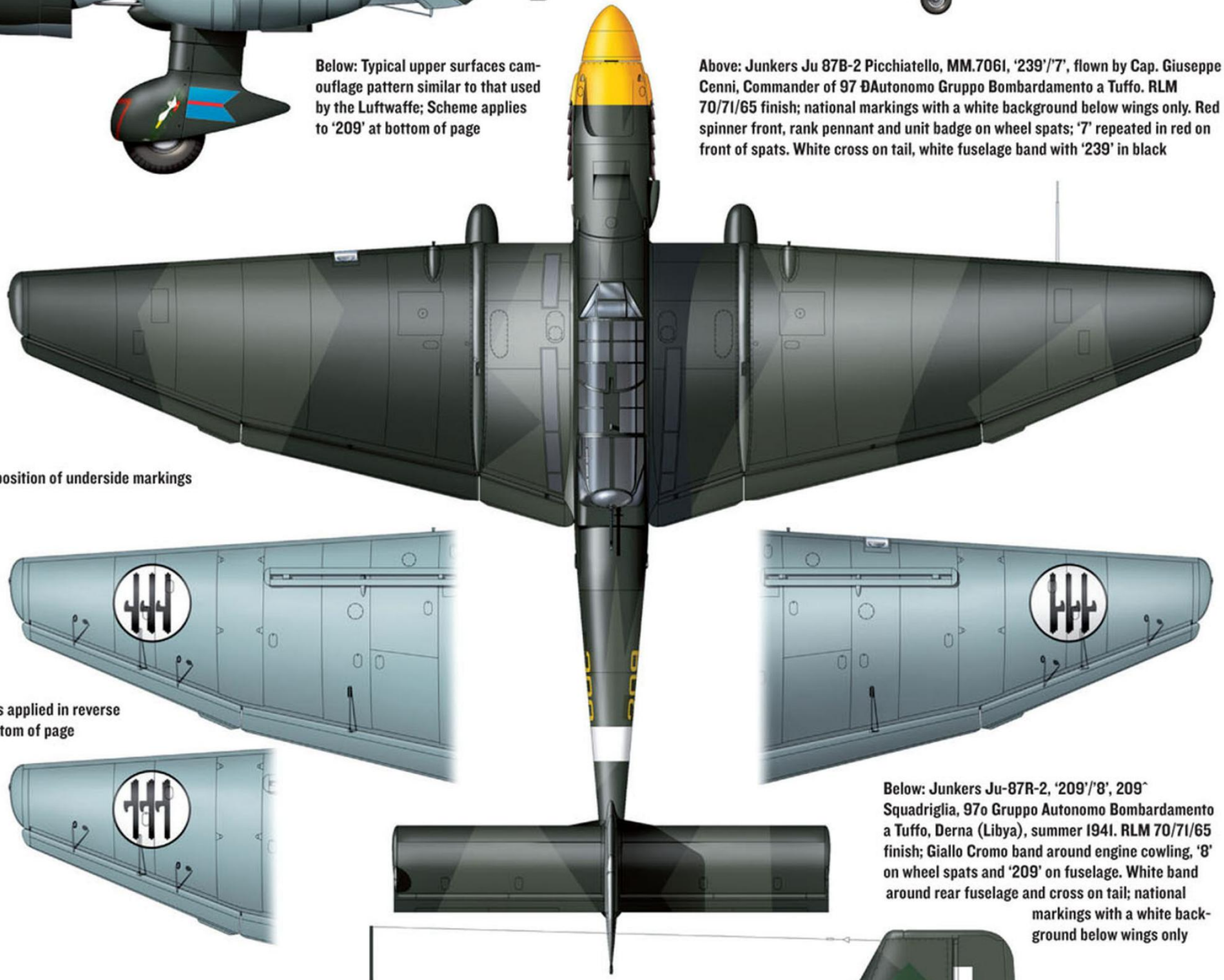


Below: Typical upper surfaces camouflage pattern similar to that used by the Luftwaffe; Scheme applies to '209' at bottom of page

Above: Junkers Ju 87B-2 Picchiatello, MM.7061, '239'/'7', flown by Cap. Giuseppe Cenni, Commander of 97 ÐAutonomo Gruppo Bombardamento a Tuffo. RLM 70/71/65 finish; national markings with a white background below wings only. Red spinner front, rank pennant and unit badge on wheel spats; '7' repeated in red on front of spats. White cross on tail, white fuselage band with '239' in black



Typical size and position of underside markings

National markings applied in reverse on '209-18' at bottom of page

Below: Junkers Ju-87R-2, '209'/'8', 209^ Squadriglia, 97o Gruppo Autonomo Bombardamento a Tuffo, Derna (Libya), summer 1941. RLM 70/71/65 finish; Giallo Cromo band around engine cowling, '8' on wheel spats and '209' on fuselage. White band around rear fuselage and cross on tail; national markings with a white background below wings only

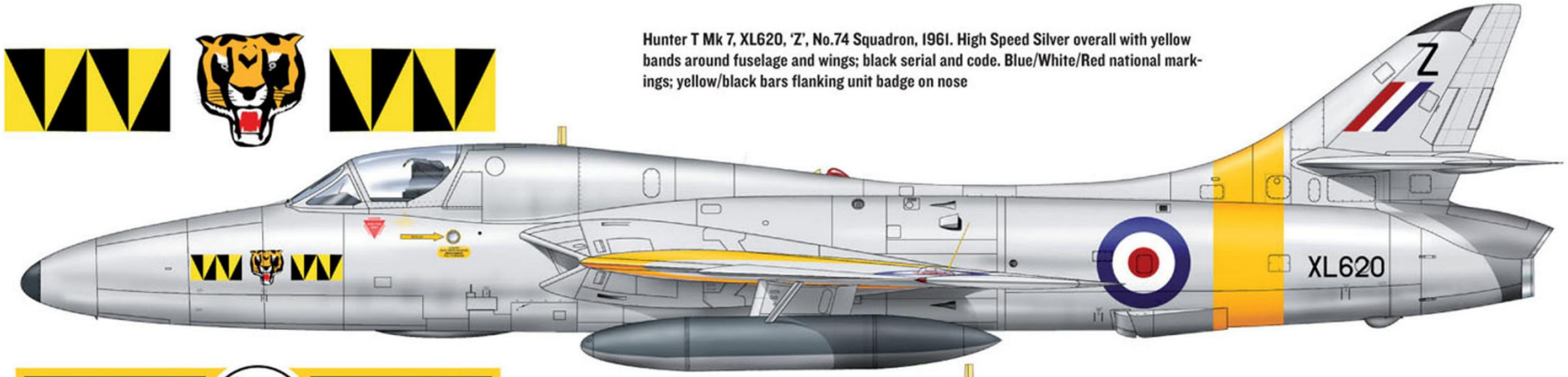
Profiles 1:72 Scale

0 METRES 1 2

0 FEET 3 6

Junkers Ju-87B-2 Picchiatello, W/Nr. 5763, '209'/'18', 209^ Squadriglia, 101o Autonomo Gruppo Bombardamento a Tuffo, Derna (Libya), late summer 1941. RLM 70/71/65 with all German national markings overpainted; Giallo Cromo nose, '209' on fuselage and '18' on wheel spats. White tail cross and rear fuselage band; national markings with a white background below wings only, and in this case they have been painted pointing backwards

Hunter T Mk 7, XL620, 'Z', No.74 Squadron, 1961. High Speed Silver overall with yellow bands around fuselage and wings; black serial and code. Blue/White/Red national markings; yellow/black bars flanking unit badge on nose



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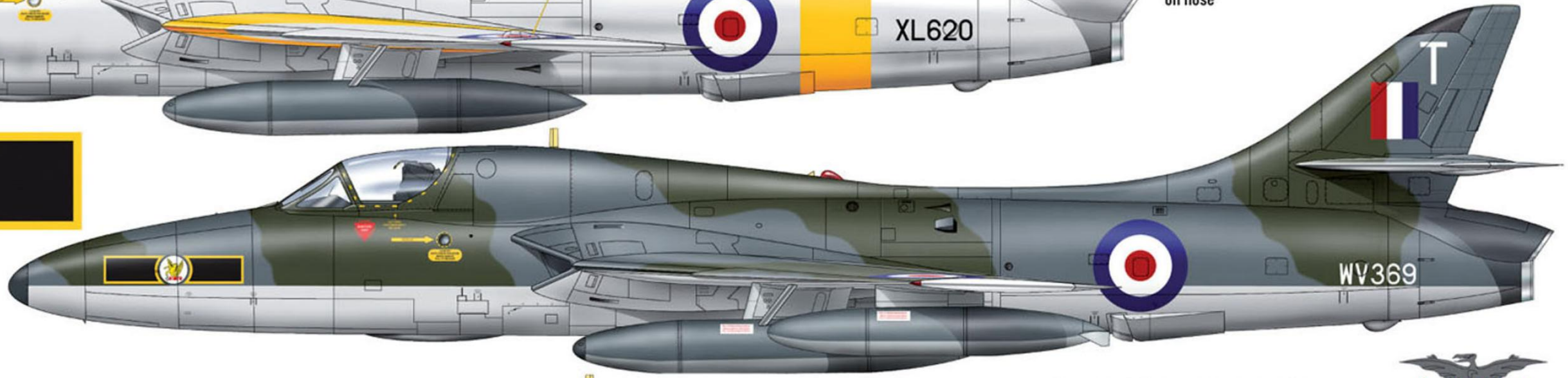
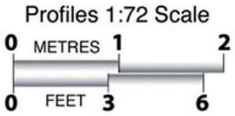
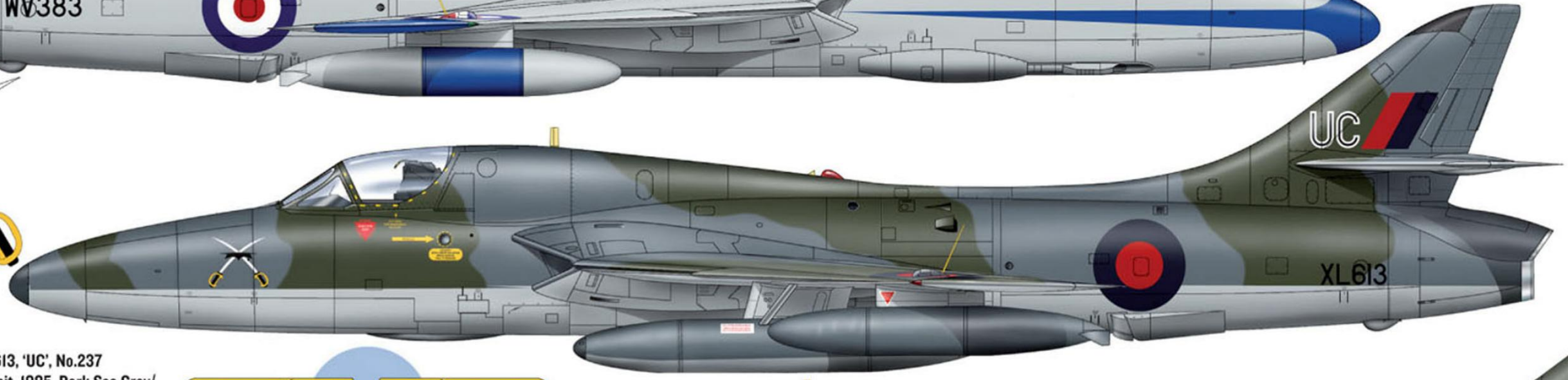
Below: Hunter T Mk 7, WV369, 'T', No.28 Squadron, Kai Tak (Hong Kong), mid-1960s. Gloss Dark Sea Grey and Gloss Dark Green upper surfaces with High Speed Silver undersides; Blue/White/Red national markings. White wing tips, serial and code; yellow/black bars flanking unit marking on nose



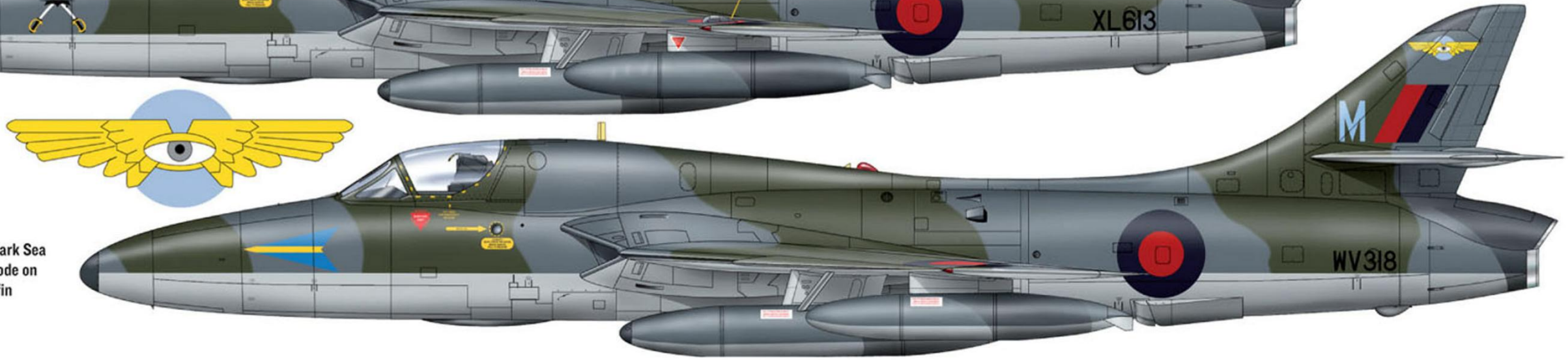
Hunter T Mk 7, WV383, Royal Aircraft Establishment, 1972. Light Aircraft Grey overall with blue trim; black anti-dazzle panel. RAE crest aft of cockpit





Above: Hunter T Mk 7, XL613, 'UC', No.237 Operational Conversion Unit, 1985. Dark Sea Grey/Dark Green/Light Aircraft Grey finish; Black code on fin thickly outlined in white; unit badge on nose

Hunter T Mk 7, WV318, 'M', No.208 Squadron, 1986. Dark Sea Grey/Dark Green/Light Aircraft Grey finih; light blue code on fin; yellow/blue arrowhead on nose, unit markings on fin



SEVERSKY P-35

J9 serialled 2134 preserved at the Flygvapenmuseum, Linköping, Sweden. This version of the P-35 had been specifically designed for the Swedish Air Force's requirements. A number of Seversky EP-1s, as it was designated by the company, were taken over by the US Government and redesignated P-35As (Dario Babich)

Seversky's P-35, marked a significant leap forward in technology compared to contemporary warplanes in service with the United States Army Air Corps (USAAC). It featured all-metal construction, a retractable undercarriage and an enclosed cockpit. Due to the rapid evolution of fighter design at the time of its introduction into service, it soon became obsolete, its role overtaken by faster and better armed types. Still, it managed to leave a mark in aviation history, and although its USAAC career was brief, the Swedish Air Force retained the J9 in service well into the early 1950s.

Born in Russia in 1894, Alexander Prokofieff de Seversky served as an officer in the Tsar's armed forces during World War One, becoming his country's third-ranking fighter ace with 13 kills to his credit. While serving as Air Attachè in the United States, the Tsar was toppled by the October 1917 revolution. Therefore he decided not to return to his homeland, attained American citizenship and joined the USAAC Reserve where he eventually reached the rank of Major. He founded the Seversky Aircraft Corporation at Farmingdale, Long Island, in 1931, taking into his fold Alexander Kartveli – another ex-Russian – as Chief Engineer. This new-born aeronautical venture began its life in a hangar at Long Island rented from the Edo Aircraft Corporation.

Seversky and Kartveli were determined to capitalise on the dramatic changes that were taking place in aviation technology. Their first product, the SEV-3, was rolled out in June 1933 and it embodied nearly all the contemporary innovations that could be combined together into a single design. Of extremely clean aerodynamic lines, the SEV-3 (the '3' referring to its three-seater configuration) was an amphibious monoplane featuring an all-metal stressed skin semi-monocoque fuselage married to a low-mounted semi-elliptical cantilever wing. It was powered by a 420hp Wright R-975-E2 nine-cylinder air-cooled radial. Originally standard single-step floats were fitted for its initial flight test, these later being substituted by 'amphibious' floats with wheels recessed into slots in the planing bottom. On 9th October 1933, Alexander Seversky himself flew the aircraft from Roosevelt Field to establish a world record for amphibians clocking a speed of 179.6mph (290km/h). With float gear replaced by a faired fixed undercarriage, top speed increased to 210mph (340km/h), well above the performance of any contemporary aircraft in its class.

Needless to say, the USAAC took notice and wrote a specification around the SEV-3 design for a two-seat trainer. A contract for 30 examples followed, under the designation of BT-8 to be powered by a 450hp Pratt & Whitney R-985-11 Wasp Junior. This became the first all-metal monoplane trainer to enter service with the USAAC, and the first of its type to be built specifically for this purpose rather than being converted from another aircraft already in service. Meanwhile, the original SEV-3 was flown on another world record attempt on 15 September 1935, where it attained a top speed of 230.413mph (370.504km/h), a record that still stands for piston-engined amphibious aircraft.

Success attained with the BT-8 prompted Seversky to initiate a private venture for an experimental fighter, designated SEC-2XD (Seversky Two-Seat Experimental Demonstrator) powered by a 850hp Wright R-1820-F3 air-cooled radial engine driving a three-blade propeller. Its designation was soon changed to SEV-2XP ('P' now denoting Pursuit) with the intention of participating in a competition called by the Air Corps Matériel Division in May 1935 for the choice of a single-seat monoplane replacement for the Boeing P-26 Peashooter then in service. Notwithstanding its two-seat layout, Seversky was convinced that it could out-pace all competition. The aircraft was finished in the spring of 1935, but on 18 June the machine was reported to have been badly damaged while on its way to Wright Field for the competition.

By that time Seversky must have learned that his two competitors, the Curtiss Model 75 and the Northrop 3A, featured retractable undercarriage. This 'fortuitous' accident allowed Seversky to stall the competition while the SEV-2XP was extensively modified: it now became a real single-seater with a partially faired retractable undercarriage where the wheels remaining partially exposed when the legs retracted rearward into fairings mounted beneath the wing. The tailwheel was also made to be fully retractable. The single-seat cockpit was fully enclosed by a sliding canopy while the power-plant was replaced by the new 950hp Wright R-1820-G5 Cyclone air-cooled radial. A new designation, SEV-1XP, reflected the single-seat layout. Armament consisted of a pair of .30in machine guns mounted above the engine cowling, synchronised to fire through the propeller arc. Although a maximum speed of 300mph (483km/h) had been estimated, the new engine did not provide its full power and 289mph (465km/h) at 10,000ft (3 042m) was the best time recorded.

This time the SEV-1XP made it to Wright Field on 15 August 1935. However, Curtiss were not happy at all when they realised that, at this late stage, Seversky's machine was practically a completely new competitor. Meanwhile, towards the end of July, the Northrop 3A had crashed into the sea during its maiden flight, forcing the fly-off to be postponed to April of 1936. Seversky again seized the opportunity of this lull to replace the troublesome Cyclone with a 850hp Pratt & Whitney R-1830-9 Twin Wasp, redesignating the aircraft once again to SEV-7. The design of the fin and rudder was also modified. In this form the SEV-7 actually registered a drop in performance, the Twin Wasp yielding only 738hp instead of the promised 850hp with the result that top speed fell to 277mph (445.4km/h).

Curtiss, too, took the opportunity of modifying its Model 75 prototype by fitting the Wright XR-1820-39 radial engine, while Vought acquired the 3A design from Northrop and took the latter's place in the competition with an aircraft based on the 3A, redesignated V-141. Another competitor cropped up as Consolidated joined the fray with a single-seat version of its PB-2A fighter.

Seversky's fighter proved to possess a clear edge in performance and handling over most of its contenders. In spite of being offered at a much higher unit price that either the Curtiss or the Vought model, the SEV-7 was awarded a contract for 77 examples (36-354 to 36-430) on 16 June 1936 under the designation P-35. The company began work on a privately-funded prototype designated AP-1 (Army Pursuit I) which was to embody all the requirements and modifications requested by the USAAC, though closely resembling the SEV-7. It reached Wright Field in March 1937, the first production P-35 (36-354) arriving two months later. While the former was transferred to the NACA in July for further tests with a close-fitting cowling at Langley Field, the latter was tested at Wright Field where it was found to be extremely unstable. Stability was somehow improved when dihedral was added to the wings and the full-faired undercarriage was replaced by a partially-faired design, permitting the aircraft to perform a gear-up landing with little damage to the airframe.

The most evident shortcoming of the P-35 proved to be its light armament of a pair of machine guns mounted on the forward fuselage, when on the other side of the Atlantic the Hurricane had made its debut armed with a formidable eight-gun wing layout. In typical American standard of the period, the P-35's guns consisted of one 0.50in (12.7mm) and another 0.30in (7.62mm). Maximum speed at 10,000 ft (3 042m) was 281.5mph (453.6km/h), cruising speed was 259.5mph (417.28km/h), it had a range of 800 miles (1 286.4km) on 134 gal. (507 litres) at 200 mph (321.6km/h), and a service ceiling of 30,600ft (9 310m). An altitude of 15,000ft (4 563m) was reached in 6.9 minutes. It weighed 4,315lb (1 960kg) empty and 5,599lb (2 542kg) loaded.

In 1937, the US Navy called for a replacement for the Grumman biplanes

then in service. Seversky presented a navalised version of the P-35 (FN-1); the competitors consisted of the Grumman F4F and the Brewster F2A. Powered by a 950hp Wright R-1820-22 engine, it was fitted with an arrestor hook and bomb racks under the wings. A larger, curved windscreen was fitted to improve pilot visibility. Top speed of the FN-1 was only marginally higher than that of the Grumman F3F it intended to replace, and eventually the winner that emerged from this competition was the Brewster F2A.

INTO SERVICE

Deliveries of P-35s began in July 1937, though at a very slow pace mainly due to Seversky's inexperience in quantity production. In fact it was not until the spring of the following year that the 1st Pursuit Group (PG), made up of the 17th, 27th, and 94th Pursuit Squadrons (PS) could begin to receive their new aircraft at Selfridge Field (Michigan) and it was only in August 1938 that the last aircraft was taken on strength. Seeing that Seversky's rate of production was well below expectations, the USAAC decided to play safe and on 30 July 1937 it switched its choice in favour of the Curtiss Model 75 with an order for 210 examples under the designation of P-36. In all fairness, by the time it was entering service, the P-35's performance and overall standard had already become obsolete, and the 1st PG were eagerly awaiting the P-36 to replace it. After a short spell of flying with this Group, the P-35s were handed over to units within the 31st, 49th, 50th, 53rd and 58th PG, though even this was a temporary measure until enough P-36s could be delivered in replacement.

The 77th and final production machine (36-430) was retained by Seversky and delivered in 1938 as the XP-41. It featured a revised wing and was powered by a turbo-supercharged 1200hp R-1830-19 engine. Flown for the first time in March 1939, it attained a maximum speed of 323mph (529.4km/h) at 15,000ft (4 563m). Although the XP-41 looked promising, the USAAC favoured the AP-4 which eventually emerged as the YP-43.

By 1940, the P-35 had been overtaken in all respects. Its undercarriage retraction mechanism often failed, the engine suffered oil leaks, and the shotgun engine starter often jammed. Furthermore, its armament was too light, there was no armour protection for the pilot nor did it possess self-sealing fuel tanks. As the P-39 and P-40 appeared, the P-35's front-line days with combat units came to an end and surviving aircraft found their way to training units or as ground instructional machines. P-35 36-404 is today on display at Wright-Patterson Air Force Base Museum in Dayton (Ohio), finished in the markings of the 94th PS.

EXPORT ORDERS

Seversky knew that the basic design of the P-35 had export potential, and soon went about soliciting export orders. To begin with, the company developed a two-seat fighter designated 2PA-L powered by a Wright R-1820 engine offering 1000hp. The sole example built, together with an amphibious version fitted with a 850hp Wright R-1820-G2, were acquired by the Soviet Union in March 1938. Although a licence for its manufacture was also acquired by the Soviet Union, the 2PA-L was never built in quantity.

The sale of 22 two-seat fighters, similar to the 2PA-L to Japan raised quite a few eyebrows in the United States. These were to serve for a very brief period bearing the designation of Navy Type S, or A8V1 (Allied code name 'Dick'). Although they saw some combat during the Sino-Japanese war, they had been retired from front-line service by the time hostilities broke out in the Pacific. This sale, combined with the slow delivery of the USAAC order, lost the Seversky Corporation all chances of any further orders, and by the end of 1938 the company was facing bankruptcy.

Meanwhile, another company demonstrator had been developed as the EP-1 (Export Pursuit 1), powered by a 1,050hp R-1830-SC2G engine. Essentially it was a re-engined P-35 with a lengthened rear fuselage, it bore civil registration NX2587. In this form, it was demonstrated by Seversky himself in Sweden in April 1939; while he was away, he was voted out of office by the board of directors! Ralph S. Damon took over command, while Alexander Kartveli was appointed Vice President and Technical Director

Interesting detail showing the stencilling and serial number on the rear fuselage of the Swedish museum's J9 (Dario Babich)

for the reformed company, now renamed 'Republic Aviation Corporation', where he was to reach new heights with his design of the P-47 Thunderbolt.

Two months later, on 29 June 1939, the Swedish government placed an order for 15 examples of the export model of the P-35. Republic designated the Swedish version as EP-106; it was fitted with the more-powerful 1050 hp Pratt & Whitney R-1830-45 radial, and armed with a pair of 7.9mm KSP M/22 guns above the forward fuselage and an additional pair of 13.2mm AKAN M/39 guns in the wings. The EP-106 had a maximum speed of 310mph (450km/h) at 14,300ft (4 350m), initial climb rate was 1,920ft/min (584m/min), service ceiling was 31,400ft (9 552m), while maximum range was 950 miles (1 527km). The aircraft weighed 4,575 lbs empty (2 077.5kg) and 6,118 lbs (2 777.6kg) loaded.

A second Swedish order, this time for 45 EP-1s, was placed on 11 October 1939. The initial order for 15 examples was completed on 18 January 1940, and by the following month these aircraft had reached Sweden. On 5 January, Sweden placed an additional order for 60 EP-1s, thus bringing its total requirement to 120 examples. The EP-1s entered service with Flotiljsiffra 8 of the Flygvapnet (Royal Swedish Air Force) under the designation J9, replacing the older Gloster Gladiators. The second contract was completed on 18 June 1940, and these 45 examples were to be the last to be make it to Sweden. The third con-

Detail of the vertical tail surfaces showing the serial 2134 stencilled on both fin and rudder top (Dario Babich)

tract was scheduled to be completed by 7 February 1941, but the US Government placed an embargo on all export orders on 24 October 1940, except for aircraft destined for Great Britain. Of the 60 still on order for Sweden, but undelivered, 40 were already packed in crates awaiting shipment. These, together with a small number that were at an advanced stage on the production line, were taken over by the Air Corps and allocated serial numbers 41-17434 to 41-17493. A further batch of 50 2-A two-seat versions of the EP-1, also destined for Sweden, was also seized. Allocated serial numbers 41-17494 to 41-17543, they were redesignated AT-12 (Guardsman) and were handed over to the USAAC as advanced trainers.

Redesignated P-35A, these ex-Swedish contract machines were eventually fitted with indigenous weapons, that is a pair of .30in (7.62mm) and another pair of .50in (12.7mm) Brownings. About 40 P-35As were shipped to the Philippines and assigned to the 21st and 34th PS of the 4th Composite Group. There had been no time to modify the aircraft for US service, so instruments were still calibrated in metric. To complicate matters further, all technical manuals were in Swedish! All this, combined with lack of spares, made it difficult to maintain a high level of serviceability.

When the Japanese launched their attack on the Philippines on 8 December 1941, the P-35As formed the first line of defence of the islands, and both squad-

Detail of the port main undercarriage; also note the long wing gun barrel and the cartridge collector fairing below the wings (Dario Babich)

rons moved from Nichols Field to Del Carmen Field. Within days, the P-35As had been butchered by Zero fighters, and by 12 December only eight airworthy fighters remained. By resorting to cannibalisation, an average of nine serviceable aircraft was attained by the middle of the month. This fell to five towards the end of the month; by that time the P-35As were operating from a strip near Lubao that had to be abandoned by 3 January 1942 when the combat career of this little fighter practically came to an end.

The Swedish J9s, however, were to remain in service much longer. All three squadrons of Flotiljsiffra 8 were to fly the type well into 1944, and the compartment aft of the pilot is reported to have also been used for 'skydiving' by crew members seeking a bit of fun! By 1945, a number of the J9s appear to have been modified for the reconnaissance role, bearing the (unofficial) designation of S9C. Since Flotiljsiffra 8 was a fighter wing, 21 of these aircraft were transferred to Flotiljsiffra 11 during the spring of 1945 and although officially they were 'on loan', they were marked with the unit's familiar yellow '11' on the fuselage. Another Swedish unit which flew the J9 was Flotiljsiffra 5, belonging to the Kungliga Flygkrigsskolan (renamed Kungliga Krigsflygskolan in 1943), a specialised flying school at Ljungbyhed, which flew a variety of aircraft types. As far as could be ascertained, the J9/S9C was only fully withdrawn from service in Sweden in 1952. Today, a splendid example of this aircraft can be admired at the Flygvapenmuseum, Linköping, Sweden.

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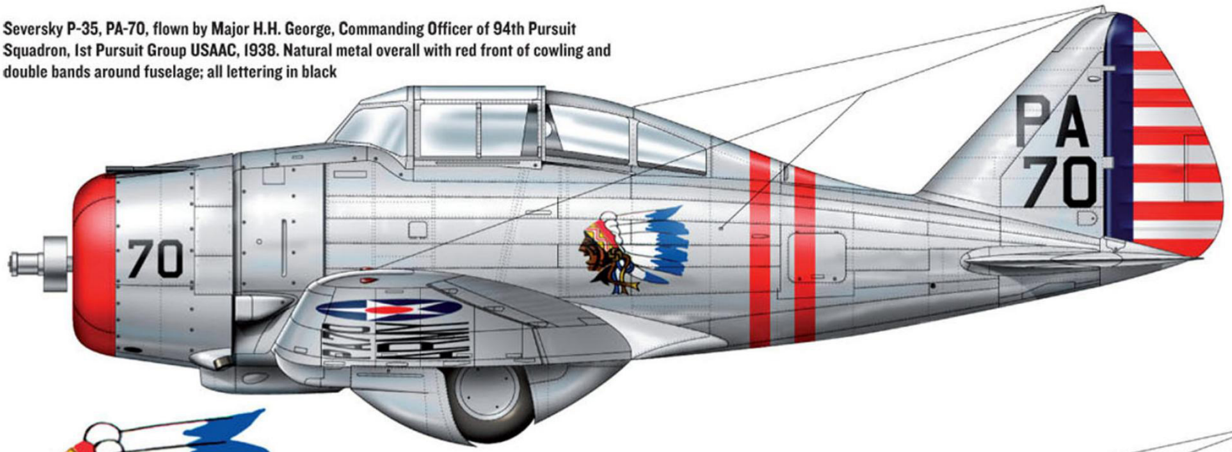
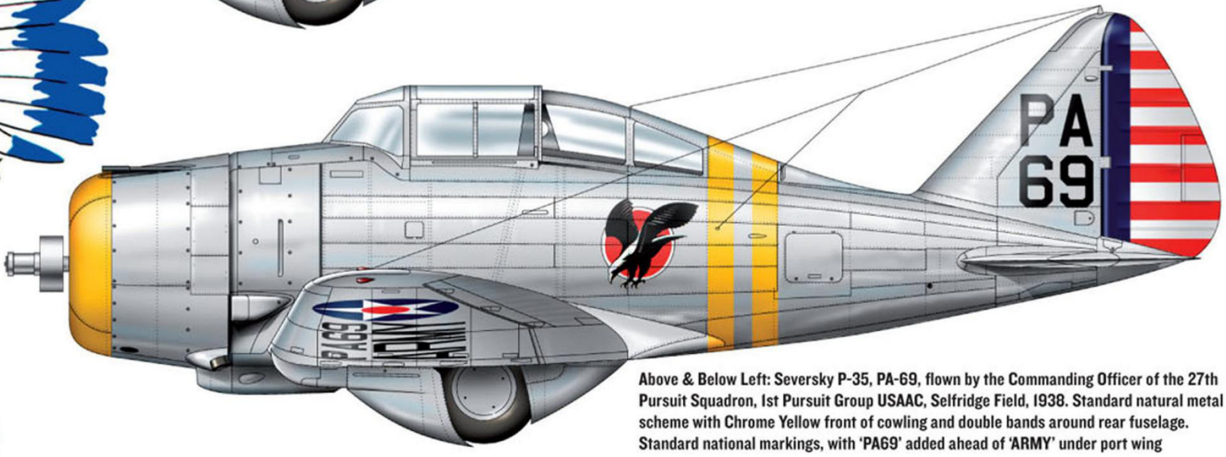
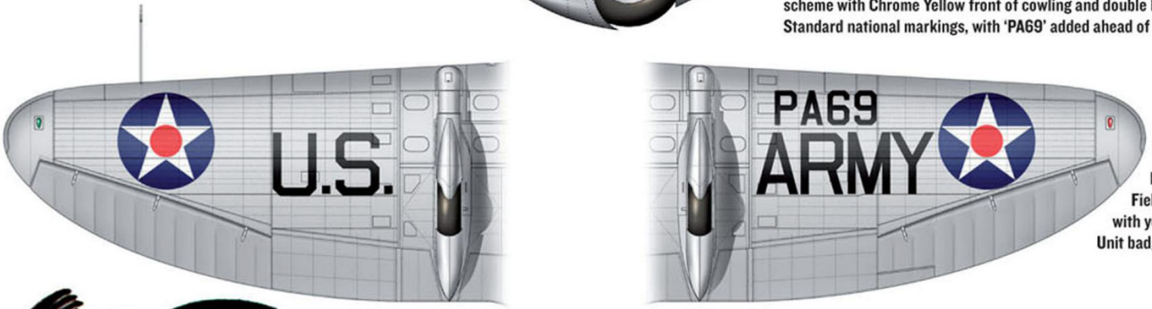
Acknowledgments: My sincere thanks to Mikael Östberg for the wonderful material he volunteered enabling me to enrich the colour pages with some very colourful schemes and markings, and to Dario Babich who gave me permission to use his excellent photographs of the J9 preserved at the Flygvapenmuseum.

Seversky P-35, PA-70, flown by Major H.H. George, Commanding Officer of 94th Pursuit Squadron, Ist Pursuit Group USAAC, 1938. Natural metal overall with red front of cowling and double bands around fuselage; all lettering in black

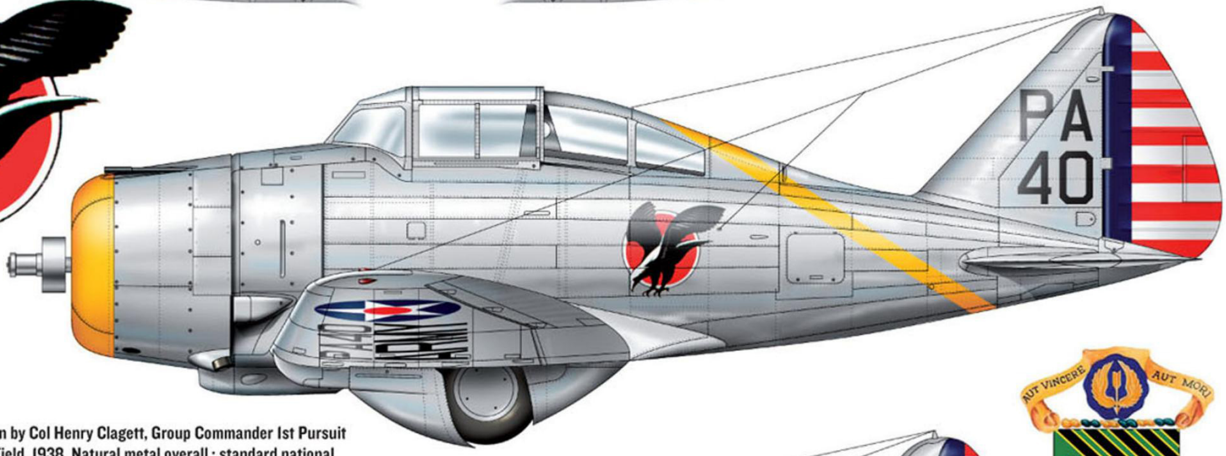




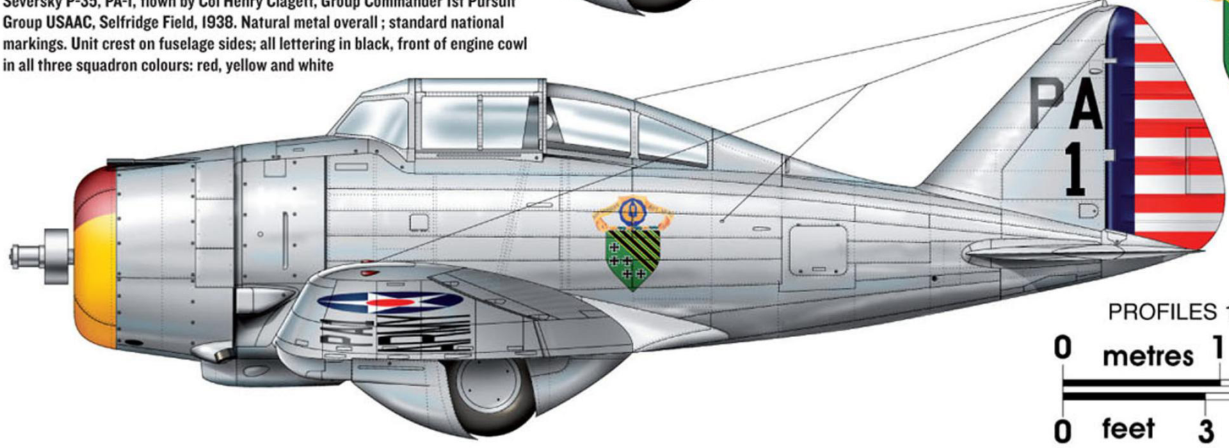
Above & Below Left: Seversky P-35, PA-69, flown by the Commanding Officer of the 27th Pursuit Squadron, Ist Pursuit Group USAAC, Selfridge Field, 1938. Standard natural metal scheme with Chrome Yellow front of cowling and double bands around rear fuselage. Standard national markings, with 'PA69' added ahead of 'ARMY' under port wing

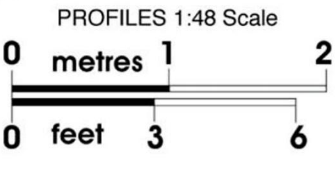


Below: Seversky P-35, PA-40, 27th Pursuit Squadron, Ist Pursuit Group USAAC, Selfridge Field, 1938. Natural metal overall with yellow trim; all lettering in black. Unit badge on fuselage sides

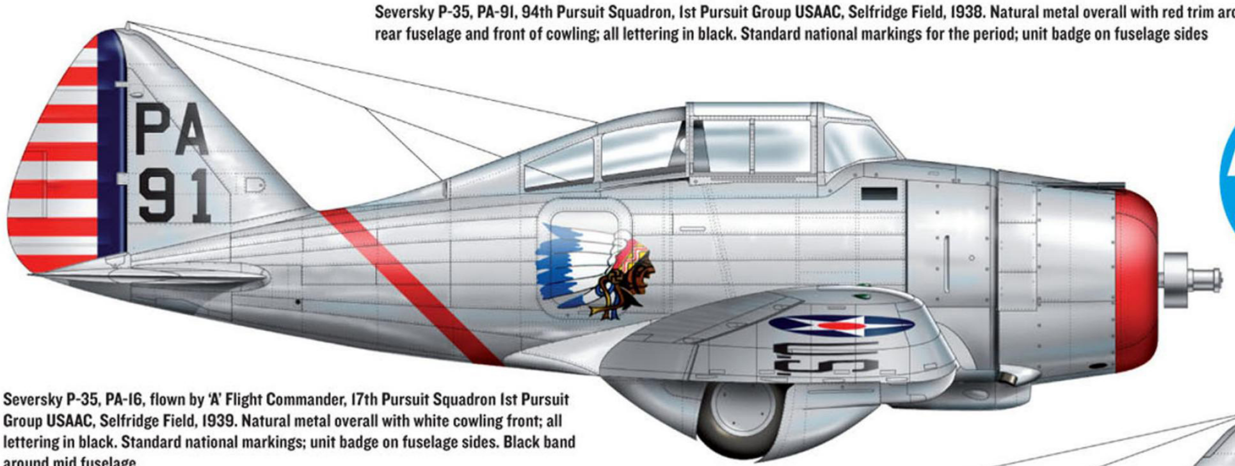


Seversky P-35, PA-1, flown by Col Henry Clagett, Group Commander Ist Pursuit Group USAAC, Selfridge Field, 1938. Natural metal overall ; standard national markings. Unit crest on fuselage sides; all lettering in black, front of engine cowl in all three squadron colours: red, yellow and white





Seversky P-35, PA-91, 94th Pursuit Squadron, 1st Pursuit Group USAAC, Selfridge Field, 1938. Natural metal overall with red trim around rear fuselage and front of cowling; all lettering in black. Standard national markings for the period; unit badge on fuselage sides



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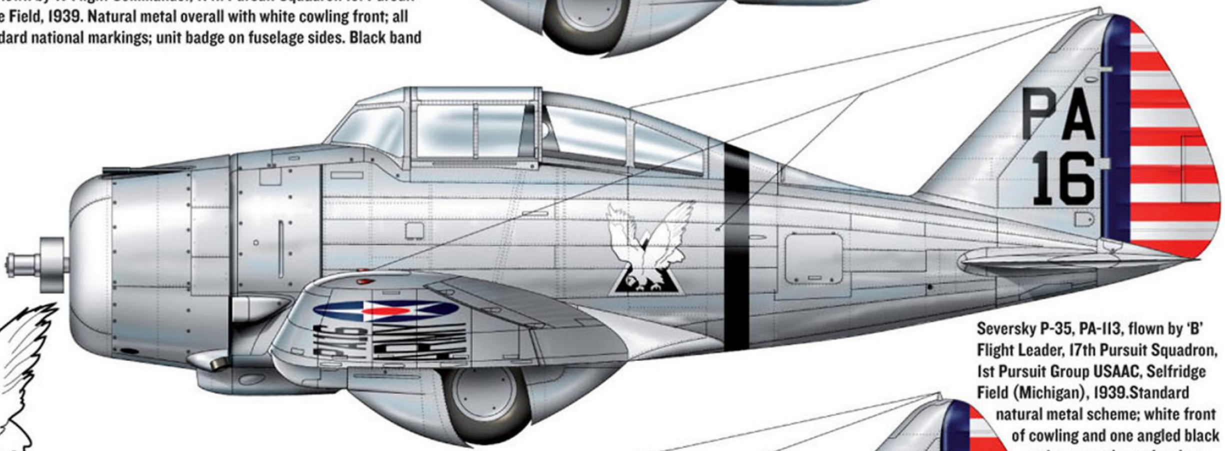
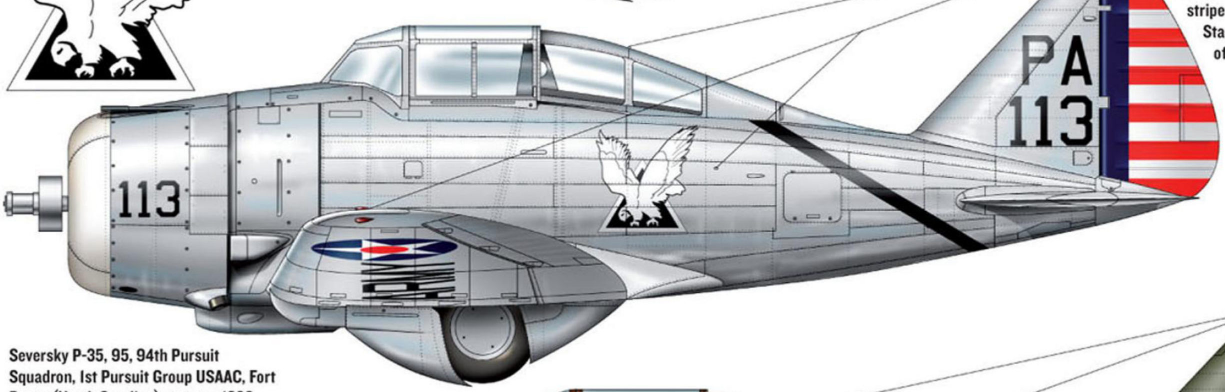
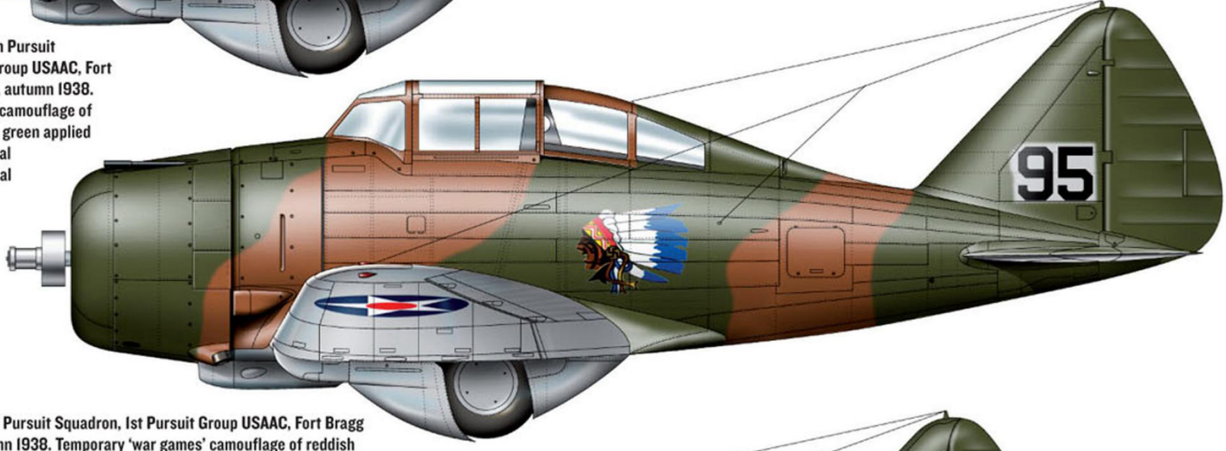
Seversky P-35, PA-16, flown by 'A' Flight Commander, 17th Pursuit Squadron 1st Pursuit Group USAAC, Selfridge Field, 1939. Natural metal overall with white cowling front; all lettering in black. Standard national markings; unit badge on fuselage sides. Black band around mid fuselage



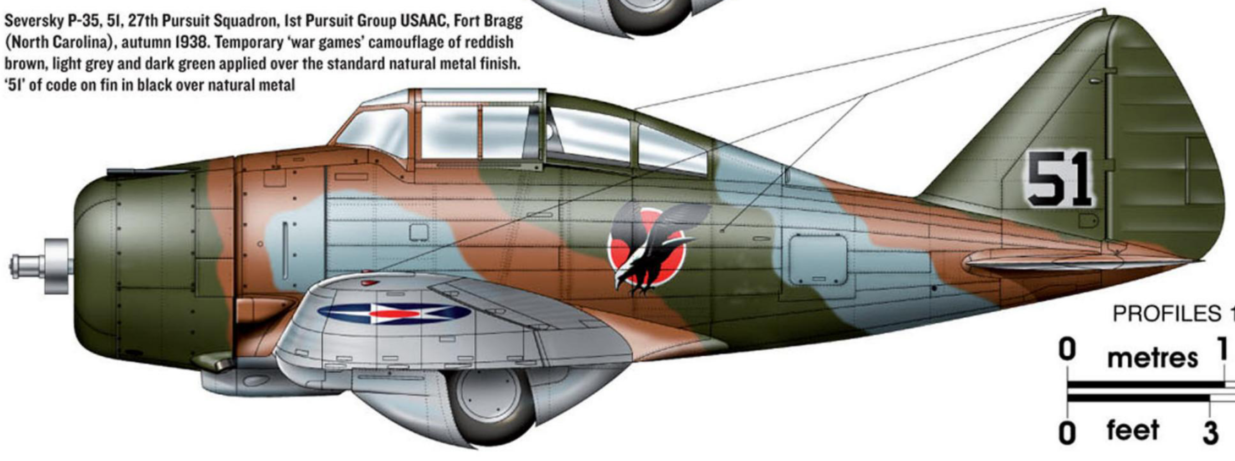
Seversky P-35, PA-113, flown by 'B' Flight Leader, 17th Pursuit Squadron, 1st Pursuit Group USAAC, Selfridge Field (Michigan), 1939.Standard natural metal scheme; white front of cowling and one angled black stripe around rear fuselage. Standard national markings of the period

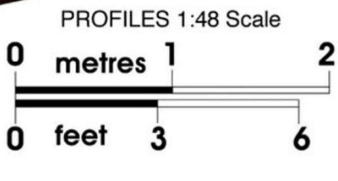


Seversky P-35, 95, 94th Pursuit Squadron, 1st Pursuit Group USAAC, Fort Bragg (North Carolina), autumn 1938. Temporary 'war games' camouflage of reddish brown and dark green applied over the standard natural metal finish. '95' of serial on fin in black over natural metal



Seversky P-35, 51, 27th Pursuit Squadron, 1st Pursuit Group USAAC, Fort Bragg (North Carolina), autumn 1938. Temporary 'war games' camouflage of reddish brown, light grey and dark green applied over the standard natural metal finish. '51' of code on fin in black over natural metal





Severksy P-35, 80-31P, flown by 'A' Flight Leader, 39th Pursuit Squadron, 31st Pursuit Group USAAC, Selfridge Field, 1940. Natural metal overall with yellow trim to rear fuselage and front of cowling, edged in black; all lettering in black. Standard national markings for the period

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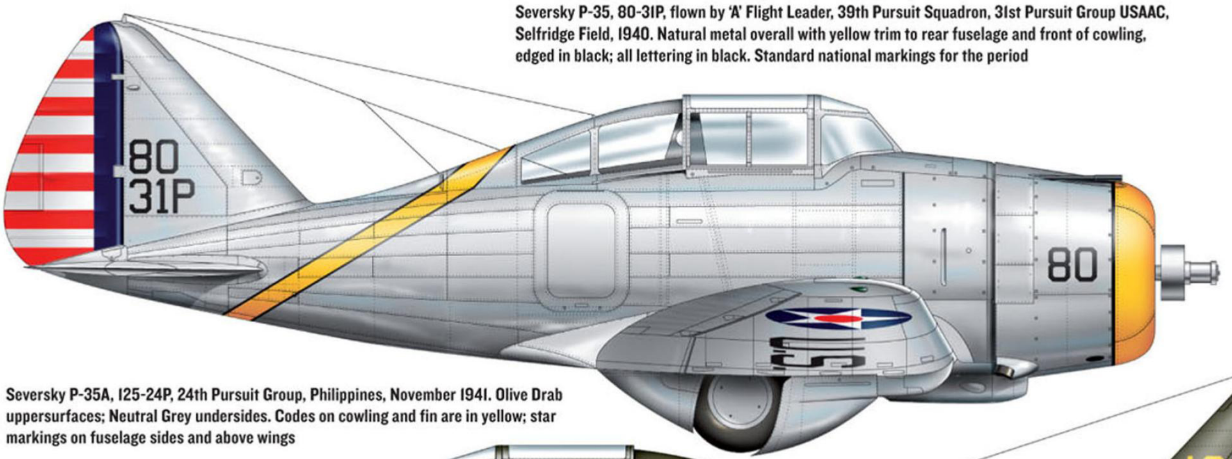
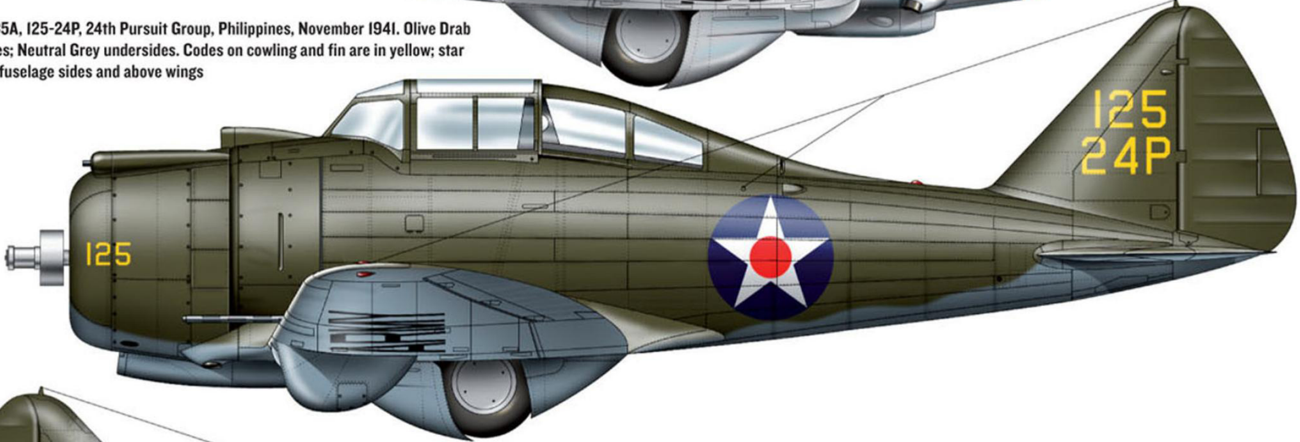
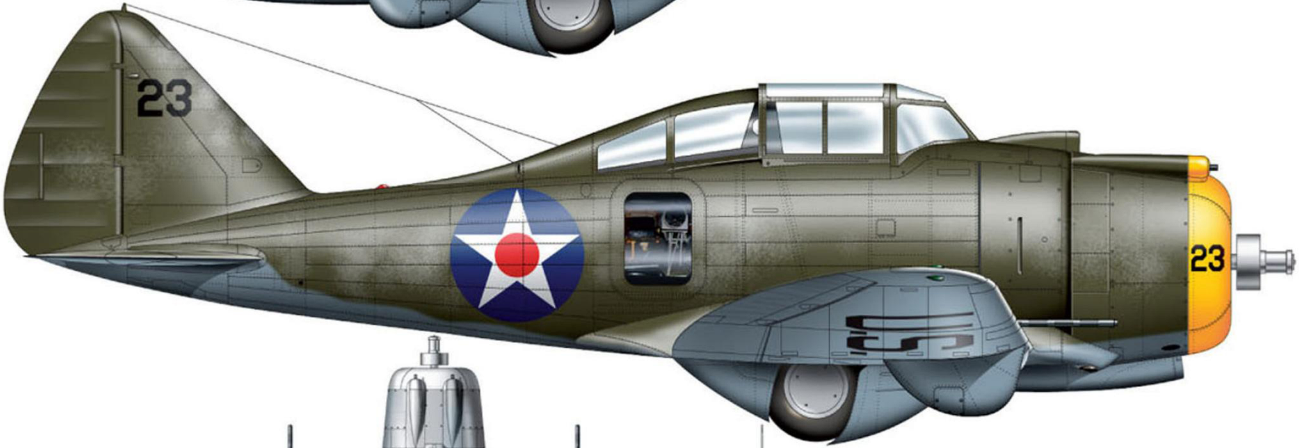
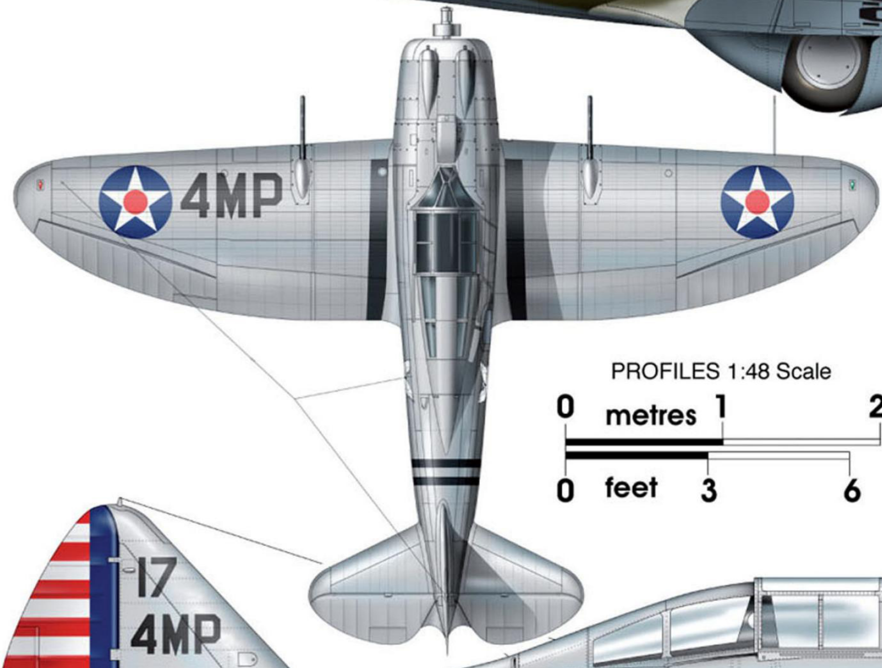


Seversky P-35A, 125-24P, 24th Pursuit Group, Philippines, November 1941. Olive Drab uppersurfaces; Neutral Grey undersides. Codes on cowling and fin are in yellow; star markings on fuselage sides and above wings





Above: Seversky P-35A, '23', 34th Pursuit Squadron USAAC, Del Carmel Field (Philippines), 8 December 1941. Olive Drab upper surfaces and Neutral Grey undersides; yellow front of engine cowling. Roundels on fuselage sides and above wings; 'U.S.' below starboard and 'ARMY' below port wings in black. '23' in black on fin and on front of engine cowling

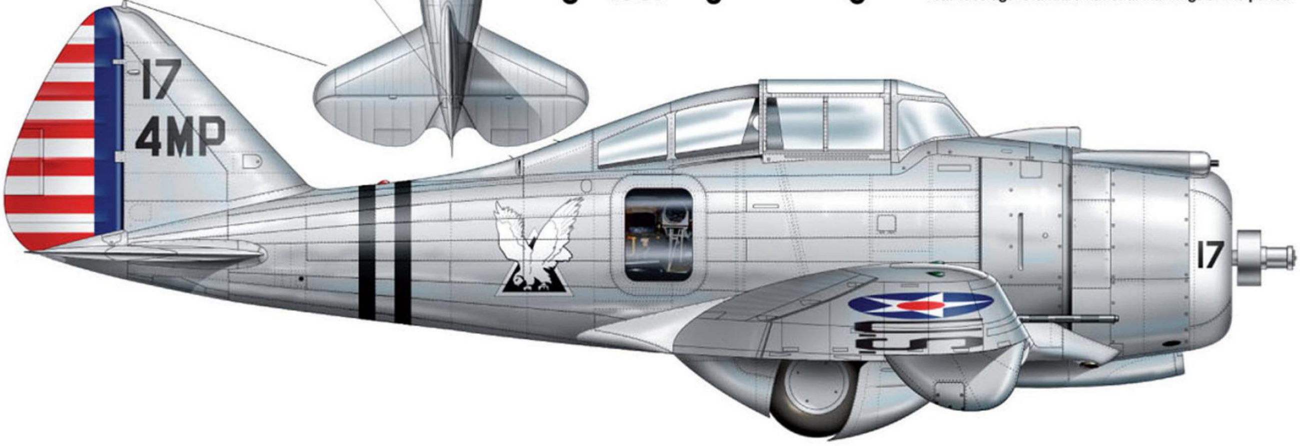


PROFILES 1:48 Scale

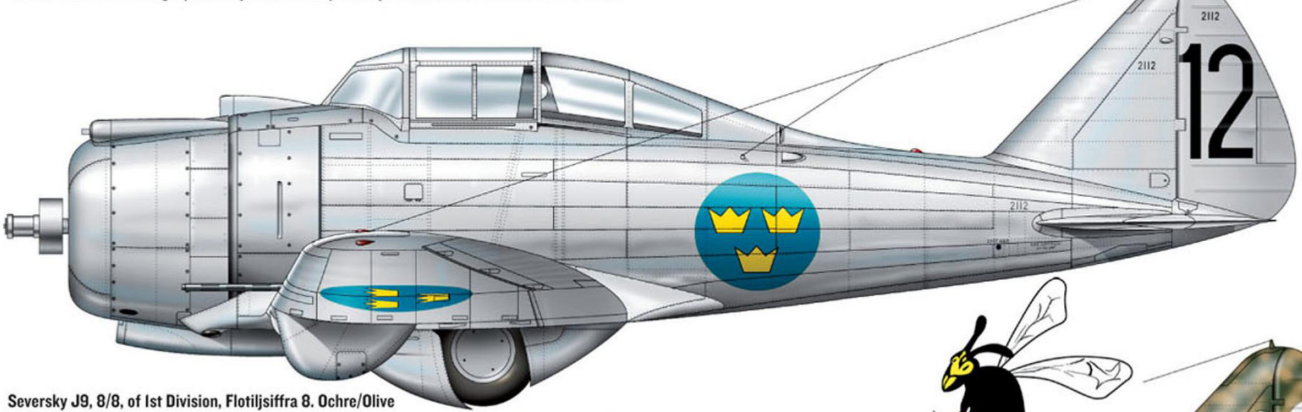
0 metres 1 2

0 feet 3 6

Left & Below: Seversky P-35A, 17/4MP, flown by Lt Boyd D. 'Buzz' Wagner, Commading Officer of the 17th Pursuit Squadron, 1st Pursuit Group USAAC, Nichols Field (Philippines), early 1941. Standard natural metal scheme; white front of cowling and two blacks stripes around rear fuselage. Standard national markings of the period

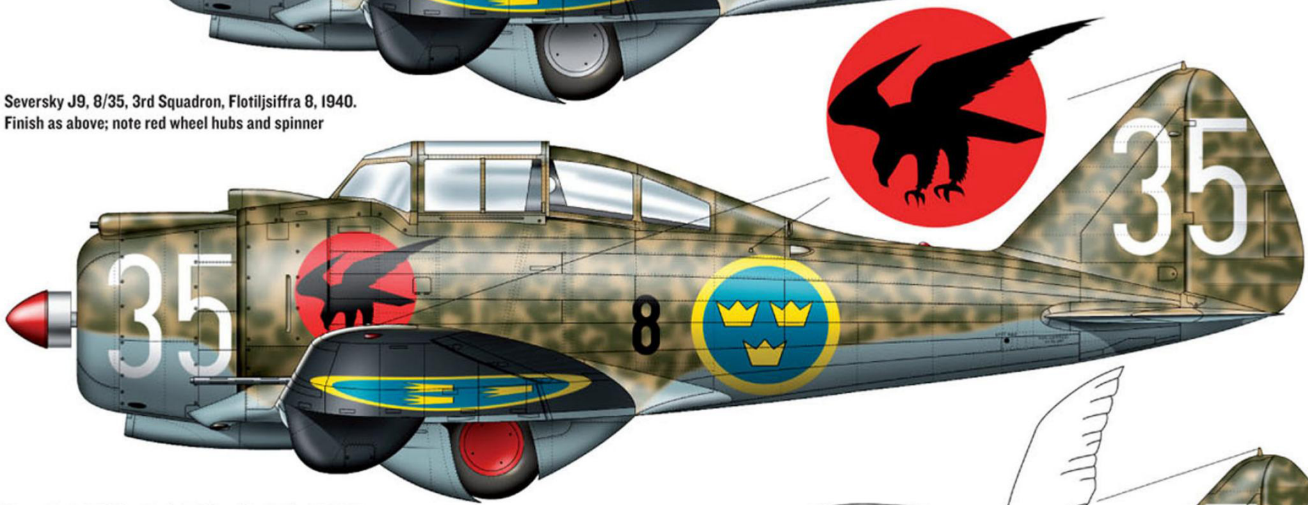


Seversky J9 (P-35A), 2112/12 in early delivery finish of natural metal overall with aluminium doped fabric areas. National markings (without yellow outline) in six positions; code '12' in black on rudder

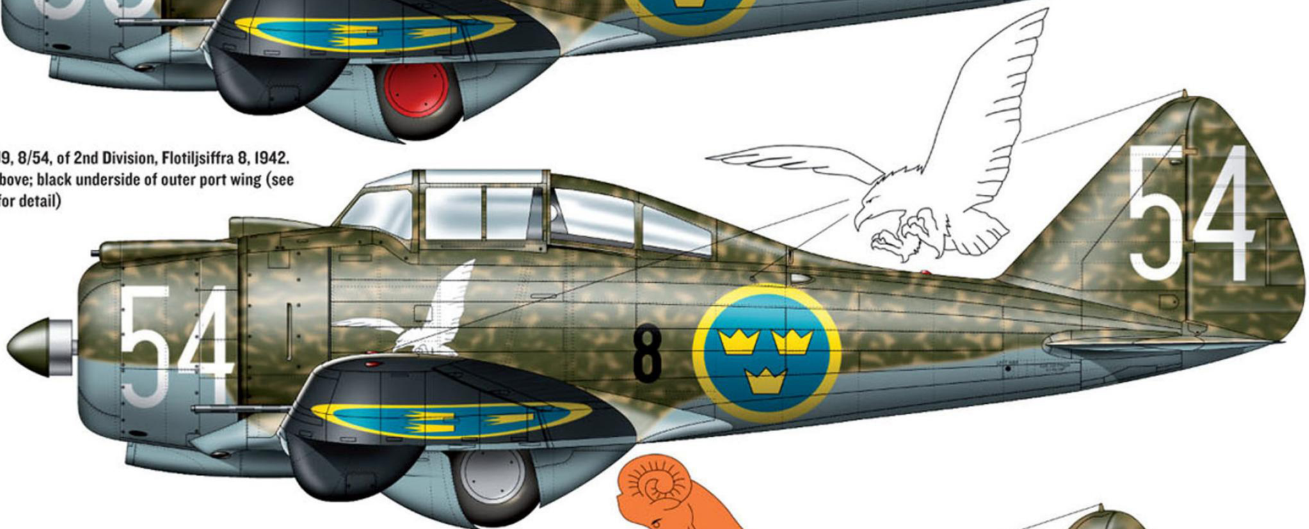


Seversky J9, 8/8, of Ist Division, Flotiljsiffra 8. Ochre/Olive Green/Light Blue Grey finish; black port outer underwing panel, white starboard. No national markings above wings. '8' on fuselage in black

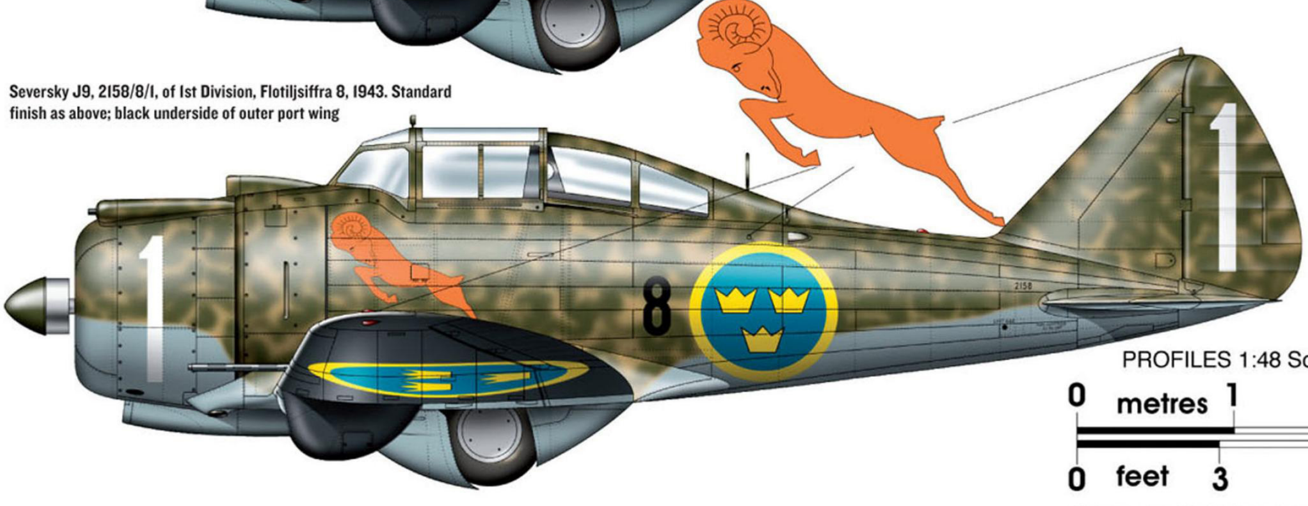
Seversky J9, 8/35, 3rd Squadron, Flotiljsiffra 8, 1940. Finish as above; note red wheel hubs and spinner



Seversky J9, 8/54, of 2nd Division, Flotiljsiffra 8, 1942. Finish as above; black underside of outer port wing (see next page for detail)



Seversky J9, 2158/8/1, of Ist Division, Flotiljsiffra 8, 1943. Standard finish as above; black underside of outer port wing



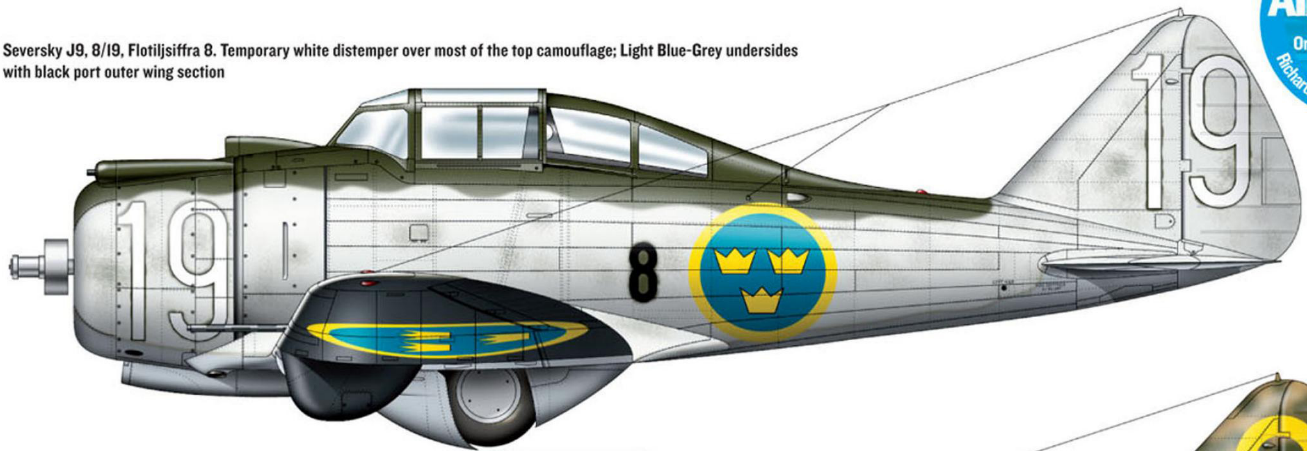
PROFILES 1:48 Scale

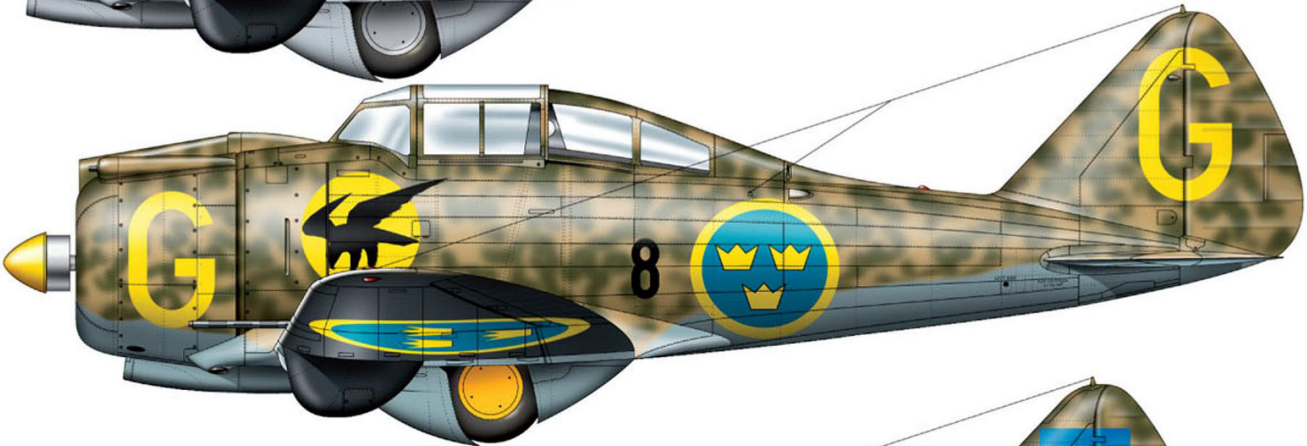
0 metres 1 2

0 feet 3 6

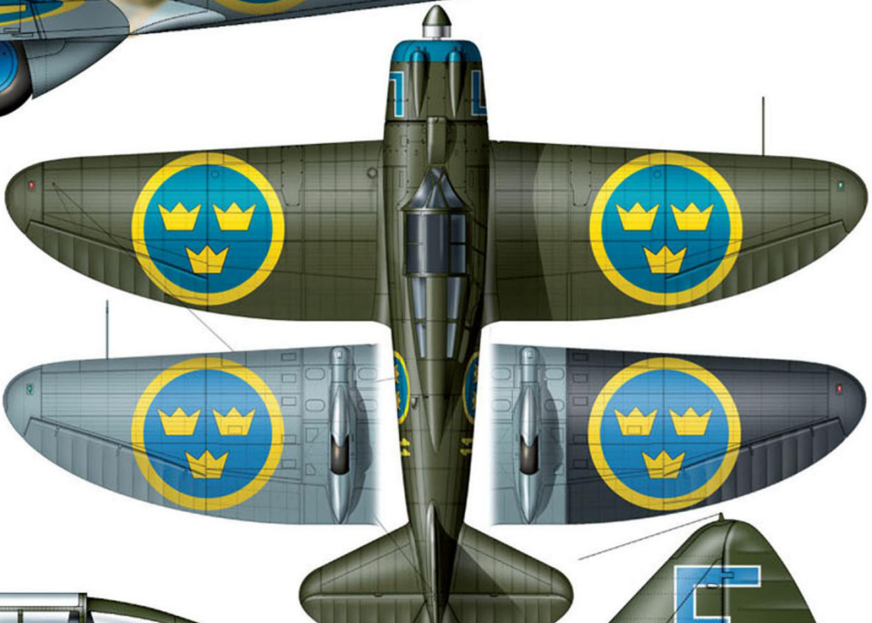
Model AIRPLANE INTERNATIONAL Original Artwork by Richard J. Caruana © MAI 2011

Seversky J9, 8/19, Flotiljsiffra 8. Temporary white distemper over most of the top camouflage; Light Blue-Grey undersides with black port outer wing section





Above: Seversky J9, 8/G, Flotiljsiffra 8 and 8/E, 2nd Squadron, Flotiljsiffra 8, 1944. Standard finish of Ochre/Dark Green/Light Blue-Grey; unit colours of yellow for the former, and blue for the latter used for the code letters, spinners and wheel hubs

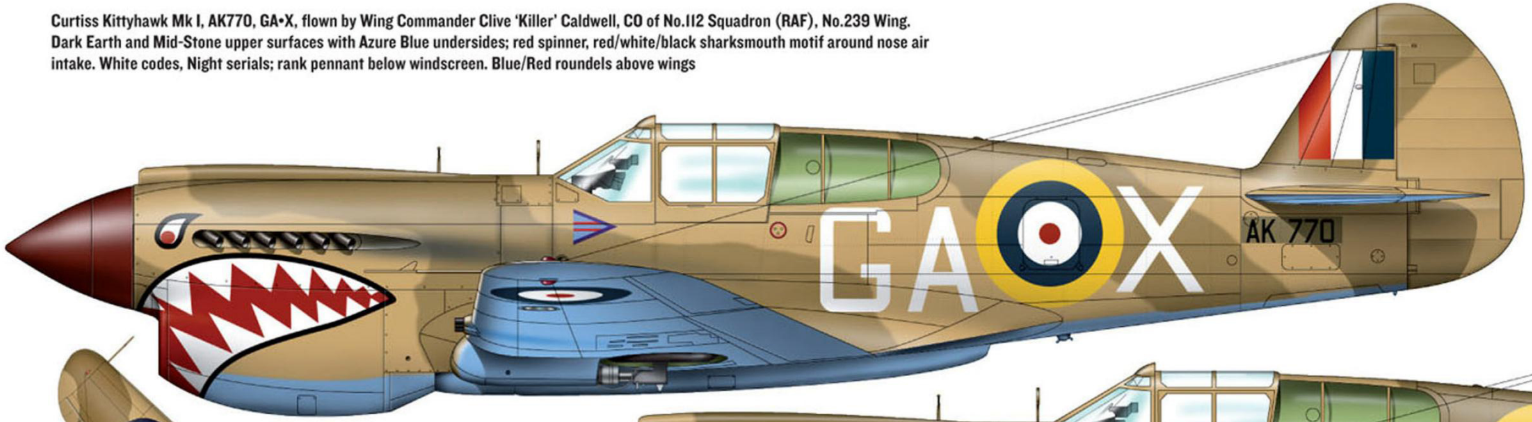


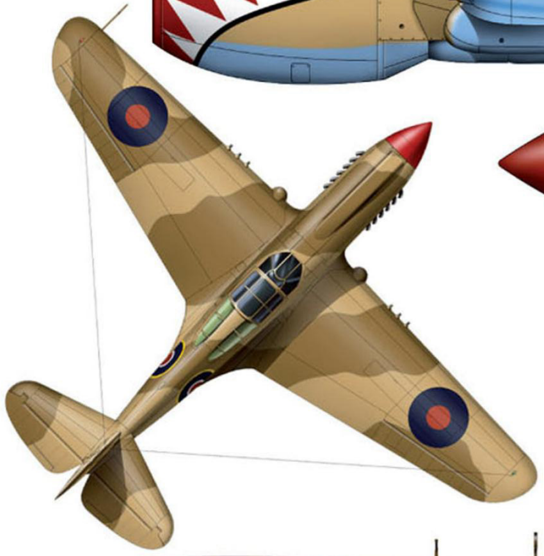
Left: Top view showing upper surfaces of 11/F below; scrap views show style of markings below the wings, with the outer port wing section painted black

Bottom: Seversky S9C, 11/F, of F.11, Swedish Air Force. Olive Green upper surfaces with Light Blue-Grey undersides. Blue 'F' outline in white on cowling and fin/rudder; blue wheel hubs and front of engine cowling. National markings in six positions; yellow '11' on fuselage. Note this is a recce version, minus wing guns but retaining the cartridge collector; note also lengthened exhaust stacks

PROFILES 1:48 Scale

Curtiss Kittyhawk Mk I, AK770, GA•X, flown by Wing Commander Clive 'Killer' Caldwell, CO of No.112 Squadron (RAF), No.239 Wing. Dark Earth and Mid-Stone upper surfaces with Azure Blue undersides; red spinner, red/white/black sharksmouth motif around nose air intake. White codes, Night serials; rank pennant below windscreen. Blue/Red roundels above wings





Below: Curtiss Kittyhawk Mk I, AK673, GA•F, No.112 Squadron (RAF), No.239 Wing RAF, North Africa. Dark Earth and Mid-Stone upper surfaces with Azure Blue undersides; red spinner, red/white/black sharksmouth motif around nose air intake. Codes in white, serial in Night; Blue/Red roundels above wings

Model Airplane International
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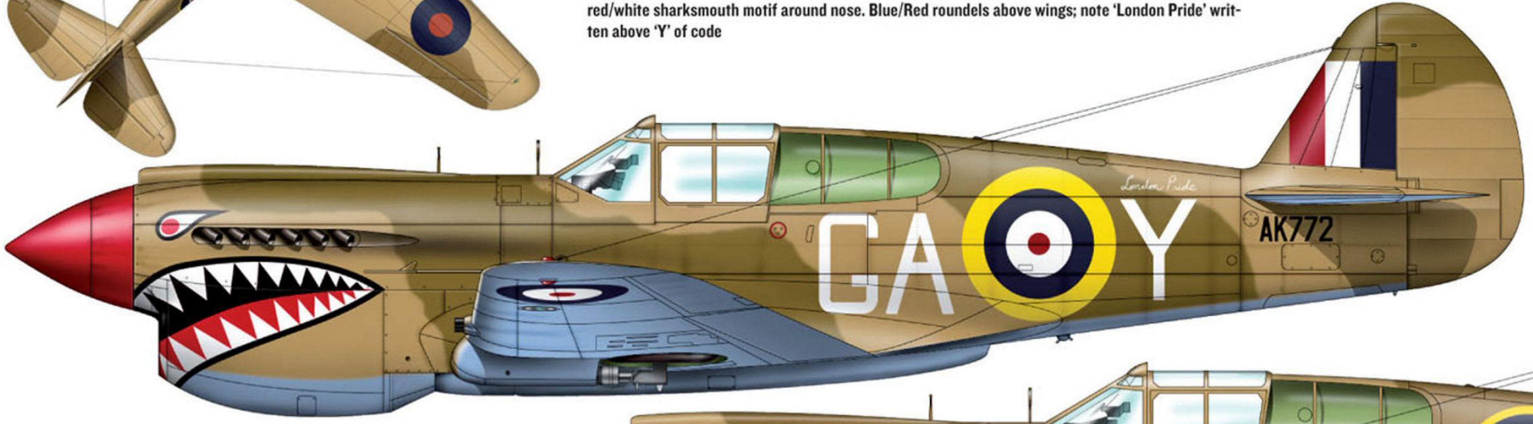
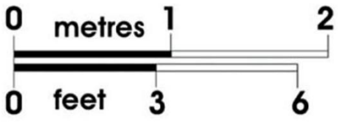
Curtiss Kittyhawk Mk I, AK772, GA•Y of No.112 Squadron (RAF), No.239 Wing, Gambut (Libya), 1942. Dark Earth and Mid-Stone upper surfaces, Azure Blue undersides. Red spinner, white codes; red/white sharksmouth motif around nose. Blue/Red roundels above wings; note 'London Pride' written above 'Y' of code



Below: Curtiss Kittyhawk Mk Ia, ET789, GA•C, flown by Sgt Hogg (SAAF) of No.112 Squadron (RAF), No.239 Wing, LG91, Amriyha (Egypt), October 1942. Dark Earth/Mid-Stone upper surfaces with Azure Blue undersides; white codes and Night serials. Red spinner, red/white 'sharksmouth' motif, outlined in black; Blue/Red roundels above wings

PROFILES 1:48 Scale



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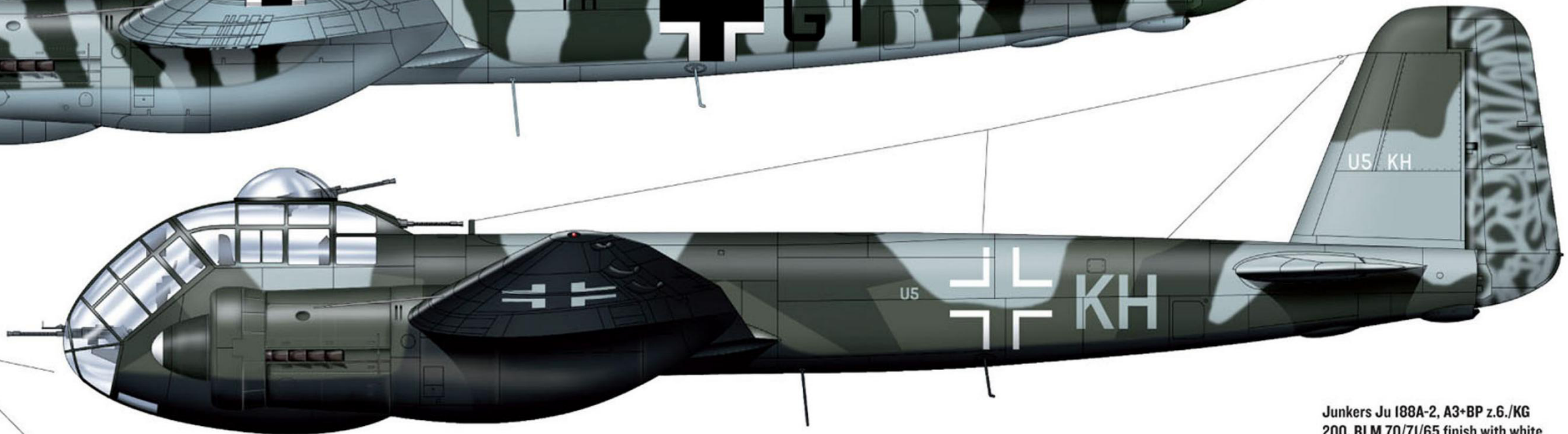
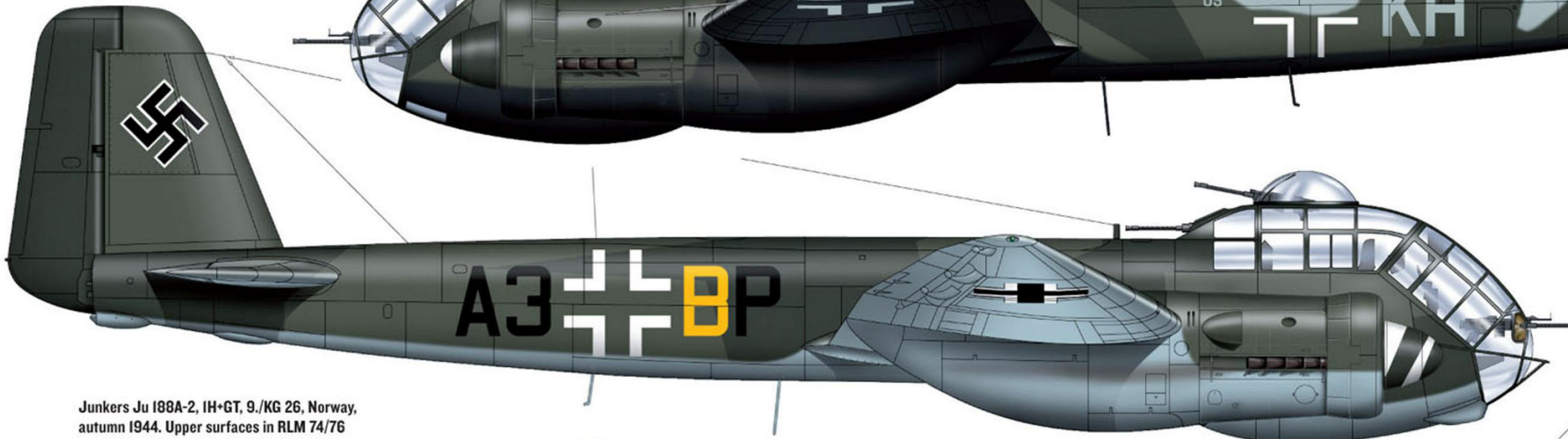
Junkers Ju 188A-2, 1H+GT, 9./KG 26, Norway, autumn 1944. Upper surfaces in RLM 74/76 except for the vertical tail surfaces which are in RLM 81/82; undersides in RLM 65. All lettering in black; white spiral on spinner

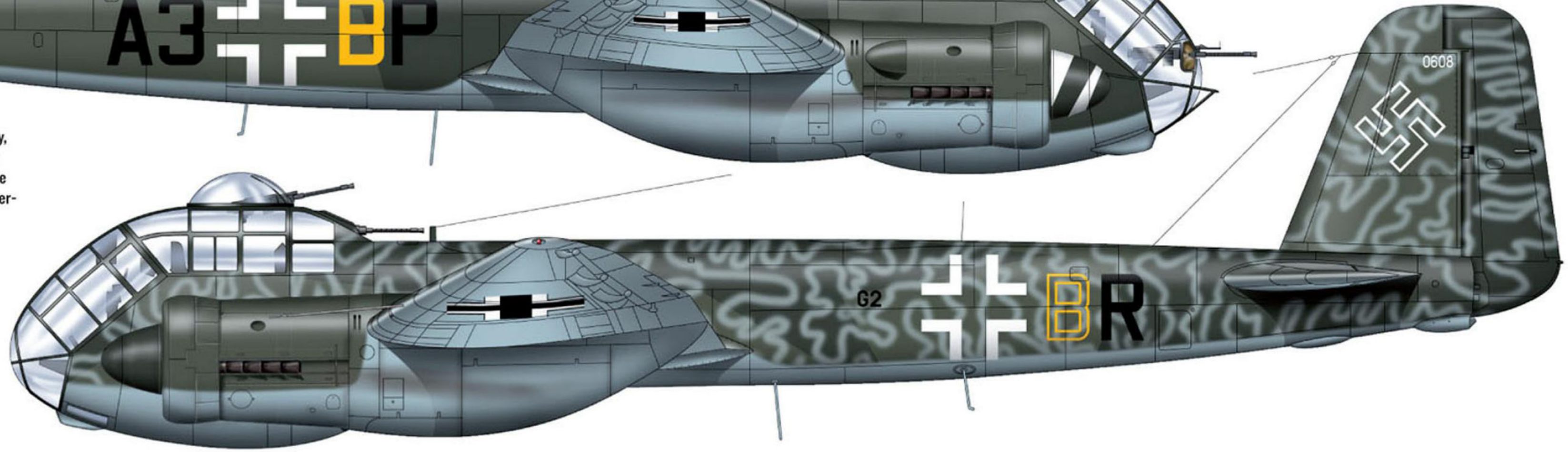
Below: Junkers Ju 188A-2, U5+KH, z.I./KG 2, 1944. RLM 70/71/22 finish with RLM 76 patches on upper surfaces; white national markings on upper surfaces, white front of spinners. Codes and underwing crosses in RLM 76



Junkers Ju 188A-2, A3+BP z.6./KG 200. RLM 70/71/65 finish with white crosses on fuselage sides and above wings; codes in black except 'B' which is yellow. White spiral on spinners



Junkers Ju 188A-2, 1H+GT, 9./KG 26, Norway, autumn 1944. Upper surfaces in RLM 74/76 except for the vertical tail surfaces which are in RLM 81/82; undersides in RLM 65. All lettering in black; white spiral on spinner



Profiles 1:72 Scale
0 metres 1 2
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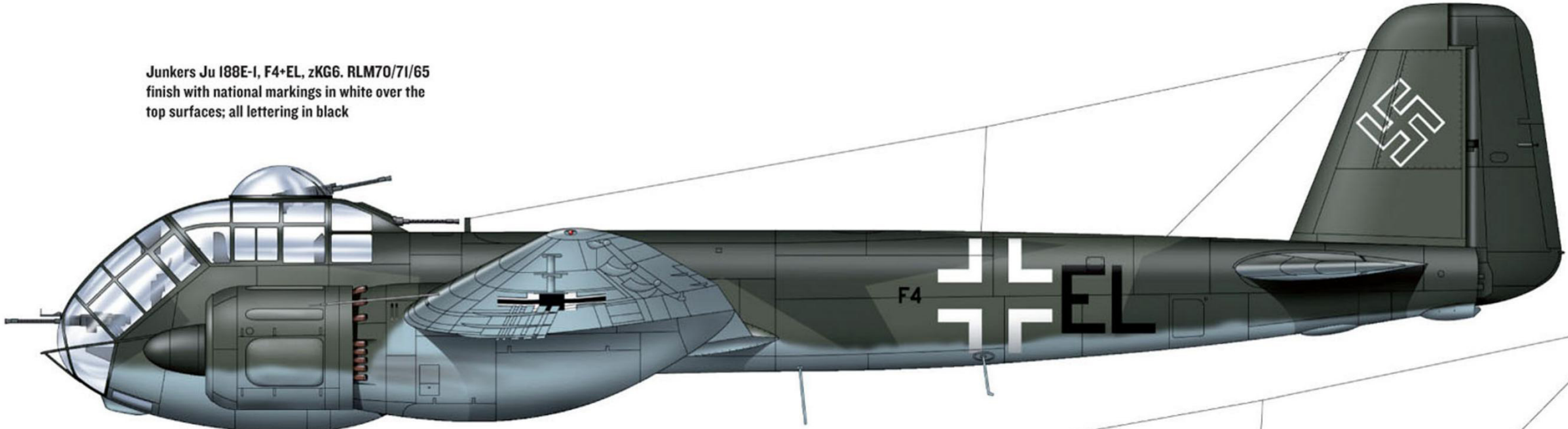
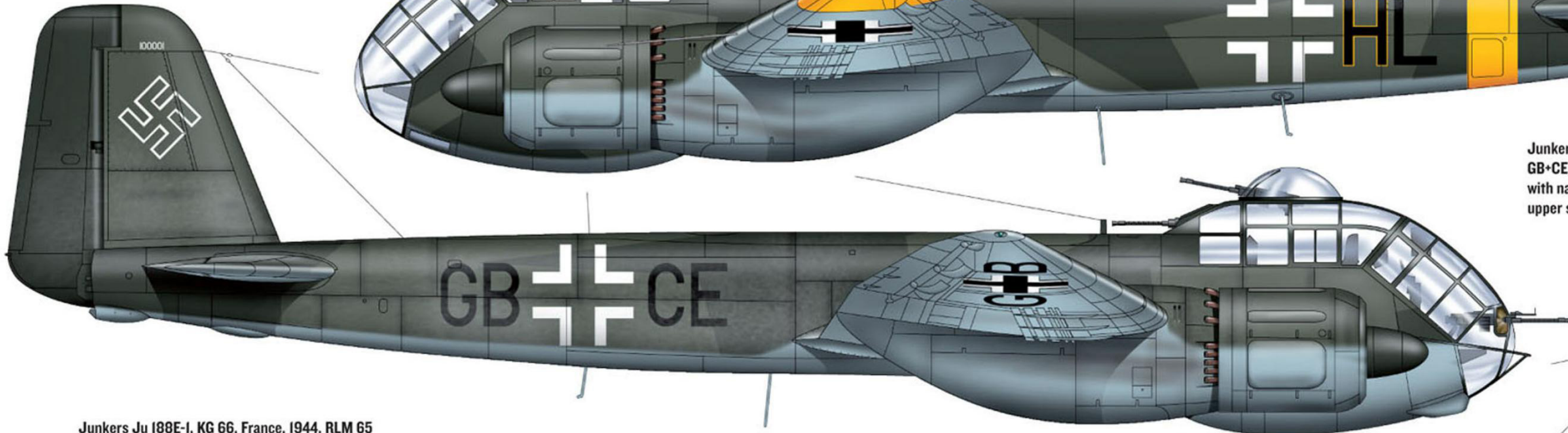
Junkers Ju 188E-1, F4+EL, zKG6. RLM70/71/65 finish with national markings in white over the top surfaces; all lettering in black

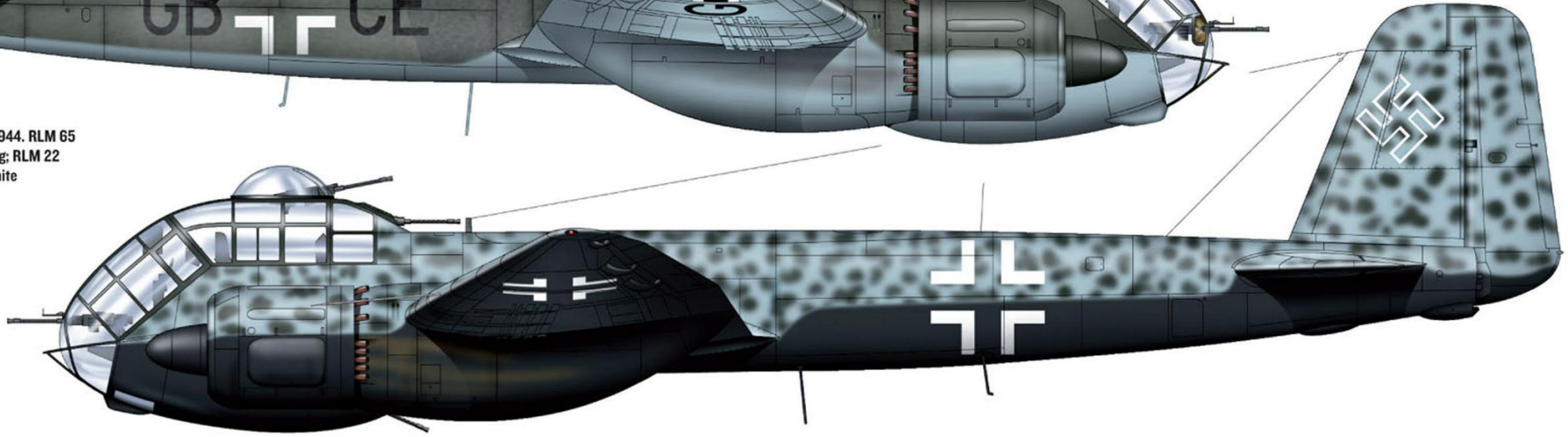


Below: Junkers Ju 188F-2, z.3.(F)22, Finland, 1944. RLM70/71/65 finish with yellow band around rear fuselage and yellow underside of wing tips; national markings on upper surfaces in white. Lettering in black with 'H' thinly outlined in yellow

Junkers Ju 188E-0, W/Nr.10001, GB+CE, 1943. RLM70/71/65 finish with national markings in white on upper surfaces; all lettering in black



Junkers Ju 188E-1, KG 66, France, 1944. RLM 65 upper surfaces with RLM 74 mottling; RLM 22 undersides. National markings in white



THE D.H. HORNET & SEA HORNET

Hornet F Mk I, PX275, ex-226 OCU (Y), at the CFE, coded GO•F. It was then transferred to No.27 MU on 28 February 1949 (R.J. Caruana Archives)

Although the de Havilland Hornet faced a terrible setback when delays to put it into production precluded it from seeing active service during the Second World War it enjoyed a short but interesting and colourful career in the immediate post-war era.

Ideas for a Mosquito successor had been brewing at de Havilland's as early as autumn 1941, when a proposal for a twin-engined high-speed unarmed night bomber was proposed under the designation of D.H. 101, powered by Napier Sabre engines. As the Sabre did not become available, choice of power was switched to Rolls-Royce Griffons or Merlins, and the type was redesignated D.H.102. Towards the end of 1942, this second proposal was also dropped and work began on a scaled-down version of the Mosquito to produce a single-seat high-speed long-range interceptor on the lines of Specification F.6/42. While its exterior design left no doubt as to its parentage, the D.H.103 established innovative clean, streamlined standards of design combined with a new method of construction, bonding metal and wood using a revolutionary new adhesive called Redux. Another important aspect was the choice of engines of low frontal area which were being especially developed by Rolls-Royce. These consisted of the Merlin 130 on the port side and Merlin 131 on starboard, driving four-bladed D.H. Hydromatic propellers rotating in opposite directions, to the right for the former, and to the left the latter. Eventually, it turned out that little more than the general layout of the Mosquito remained in the D.H.103, making it a completely new design. De Havilland proceeded with the construction of a mock-up as a private venture, and this was ready for inspection by representatives of the Ministry of Aircraft Production (MAP) by January 1943. Although impressed with what they saw, it was deemed uneconomical to put it into production, unless its range could be increased to meet Pacific theatre operational requirements.

In March, de Havilland assured MAP that they envisaged no difficulty in achieving such a task, and on 20 June of the same year permission was granted to build, under Specification F.12/43 written around the D.H.103. Work began immediately on two prototypes, RR915 and RR919. The fuselage shell of the first prototype was already on the assembly jigs in January 1944; by that time it had been given the official name of 'Hornet', and on 20 July RR915 was rolled out and readied for its maiden flight, which was performed by Geoffrey de Havilland Jnr. eight days later. During the two months that followed, de Havilland and Geoffrey H. Pike flew the first prototype for fifty and a half hours, clocking an impressive maximum speed of 491mph (790 km/h) at 24,600ft (7,500m). It's beautifully cowled Rolls-Royce engines, enabled it to climb at 4,500ft (1370m) per minute, attaining an operational ceiling of 35,000ft (10,647m). RR919 joined the test programme shortly afterwards, featuring underwing 200 gallon (909 litre) drop tanks which extended its range to 2,500 miles (4020km). It also featured underwing pylons for the carriage of a 1,000lb (454kg) bomb under each wing. Apart from impressive performance figures, the Hornet handled in an impeccable manner. This does not mean that no problems were encountered: foremost among these was tail buffeting during retraction of the main landing gear. Then it was discovered that longitudinal stability was not as good as predicted.

Meanwhile, Pat Fillingham joined the test team, and the first handed Merlins were installed in October 1944. Having propellers spinning in opposite directions did not completely eliminate the swing on take-off, although it was a major asset during landing. In fact it was discovered that part of the instability problems were created by the wash from these propellers, practically blanking the rudder at slow speeds. The addition of a fin fillet and enlarged horizontal tail surfaces were recommended but not introduced on the initial production model.

INTO PRODUCTION AND SERVICE

The production line for 60 examples of the Hornet F Mk I for the Royal Air Force (RAF) was laid down at Hatfield towards the end of 1944. PX210, the first production example, flew for the first time on 1 February 1945, and at the end of that same month was transferred to the Aircraft & Armament Experimental Establishment (A&AEE) of Boscombe Down for further trials. Quite a number of other F Mk Is were to find their way to various test centres, earmarked for specific experimental tasks. As expected, performance of this elegant twin-engined fighter dropped somewhat once armament, radio and other equipment were added. Interior armament consisted of four 20mm Hispano cannon in a ventral position, very similar to that on the Mosquito fighter. Top speed of production aircraft fell to 472mph (760km/h) at 22,000ft (6,700m).

By the time the first Hornet had been rolled out, the end of the war in Europe was drawing near, and it was also very clear that the aircraft would miss fighting in the Pacific, where it was designed to operate. In fact, it was only on 29 October 1945 that the Hornet was shown publicly for the first time, when PX237 was displayed at the RAE Farnborough Open Day. Plans to equip six squadrons of Hornet fighters with the RAF were cut down to four. No 64 Squadron at Horsham St Faith became the first operational unit to receive the new type in February 1946, replacing the Mustang Mk IV. Four months later, No.64 Squadron flew its Hornets over London as part of the Victory Flypast on 8 June. During that same month, No.65 Squadron began to re-equip with the Hornet F Mk I in place of Spitfires Mk XVIe, moving to Linton-on-Ouse on 12 August where it was joined by No.64 Squadron to form the Linton Hornet Wing.

Third in line was No.19 Squadron formed at Wittering on the type in October 1946. This squadron had also flown Spitfires LF Mk XVIe for a short while before receiving the Hornet, having previously been equipped with the Mustang Mk IV. The fourth and last RAF unit to operate the Hornet F Mk I was No.41 Squadron which received its first aircraft in June 1948 at Church Fenton. There it was joined by No.19 Squadron on 23 April 1947, thus forming the Church Fenton Hornet Wing. In case of war, all four Hornet squadrons were to transfer their operations to Duxford. So short had been the F Mk I's service, that No.41 Squadron had actually been supplied with second-hand Hornets from units already converting to a later mark, while surviving aircraft were declared obsolete in 1950.

The Mk I did achieve a certain success, such as on 31 August 1946, when Geoffrey Pike flew PX224 into third place in the Lympne High Speed Handicap air race. Among other establishments which were to operate the Hornet was No.266 Operational Conversion Unit (OCU) at Bentwaters; Hornets F Mk I were also flown by the Central Fighter Establishment (CFE) and the Empire Central Flying School (ECFS).

The PR Mk 2 never really got off the ground. The end of the war in the Pacific also marked the end of its reason to exist as it had been specifically designed to operated in that theatre. An order for 60 PR Mk 2s and 440 F Mk Is was cancelled after only five production examples of the PR version had been built. Three converted Mk Is served as prototypes having all armament removed and a battery of four cameras mounted in the rear fuselage. These included PX249 which had served as the prototype for the dorsal fin extension. VA962 was the first production aircraft to fly early in 1946; the other four examples followed later. However, none saw operational service and most of them went to RAE for trials in the Sea Hornet programme. By 1949 they had all been scrapped.

Next version of the Hornet to appear was the F Mk 3, with PX312 acting as prototype, although the first example off the production line was actually PX289 early in 1946. This version incorporated a number of modifications which corrected most of the Mk I's vices. Foremost among these was the extended dorsal fin, later to be fitted also to F Mk Is still in service, and wider span horizontal tail surfaces whose elevators were fitted with larger horn balances. Most important was the introduction of external fuel tanks which, together with increased internal fuel tank-

age now gave it a range of 3,000miles (4824km). The external fuel tanks could be exchanged with underwing bomb racks for a total of 1,000lb (450kg) under each wing. Provision was also made for four rocket rails, two under each wing.
PX366 was the first Mk 3 to make a public appearance when it was shown at Farnborough in June 1946. Production for an initial order of 85 examples got underway at Hatfield, although towards the end of 1948 the jigs were transferred to Chester. The first of 47 Hornets to be built there left the production line in March 1949, with WB873 being the first to fly; the balance from the original order for 200 aircraft was cancelled.
First to receive the new version of the Hornet was No.64 Squadron in March 1948, closely followed by its Linton-on-Ouse partner, No.65 Squadron in April. Next in line were the two squadrons of the Church Fenton Wing, No.19 in May 1948 and No 41 in July of the same year. No.65 Squadron's paid a visit to the Swedish Air Force base at Uppsala in May 1948, performing a flypast over Stockholm during their stay. A major feat was achieved by Gp Capt. Carver who, returning from Battle of Britain celebrations in Gibraltar to Bovington, established a record of 435.823mph (700.8km/hr) on 19 September 1949.
Early in 1951, these units began to relinquish their Hornets in exchange for Meteors, the first being No.41 Squadron in February, followed by No.19 in March, Nos.64 and 65 Squadrons in April, signalling the end of the type's service with Fighter Command in the United Kingdom (UK). Hornets in the Far East This withdrawal from UK-based squadrons enabled the formation of three overseas units to operate in an environment closely resembling that for which the Hornet had been born. Far East units had been engaged in fighting Communist terrorists in Malaya for quite some time, flying Spitfires, Beaufighters and Brigands. A Hornet Conversion Unit was established at Seletar while new-build and second-hand Hornets were being ferried out. First to be equipped with the type was No.33 Squadron in April 1951 at Butterworth in exchange for their Hawker Tempests F Mk 2. On 2 May, the unit transferred a detachment to Tengah, with the whole squadron moving there by 8 June.
As from October No.33 was operating against jungle targets suspected of housing terrorists using bomb, rocket and cannon strikes in support of ground forces, making full use of its aircraft's' long range capability. On 5 January 1952, the squadron moved back to Butterworth from where it launched an intensive campaign which kept up the tempo well up to 1955. No.45 Squadron received a pair of Hornets in February 1952, performing its last strike on its previous mount, the Bristol Brigand, on the 7th of that month. However, re-equipment was slow due to the Hornet's production facilities having been moved to Chester. In an effort not to leave the unit without equipment, surplus Hornets stored at Maintenance Units were quickly taken out of storage, overhauled and ferried to the Far East. This meant that No.45 Squadron could only launch its first operational sortie on 9 June 1952, six months after having relinquished its Brigands.
During the five-year period of operations from Singapore, No.45 Squadron chalked up 4,500 sorties over an extremely hostile terrain, where apart from the jungle terrorist targets the unit had to face the difficult local weather conditions. On 31 March 1955, No.33 was amalgamated with No.45 Squadron, an arrangement which did not last very long as in May it was decided to scrap the entire Hornet fleet. The only other squadron to fly the Hornet in the Far East was No 80 which up to 1949 had been based in Germany as part of the Occupation Forces. It packed its bags at Gütersloh in July and set off by sea for Hong Kong, taking with it its Spitfires F Mk 24s. Re-equipment with Hornets began in December 1951, continuing to provide for the aerial defence of Hong Kong in co-operation with No.28 Squadron's Vampires. Pilots from No.80 Squadron were at times transferred temporarily to Nos.33 and No 45 Squadrons in order to gain combat experience, which up to a certain extent relieved the boredom of routine flying back at base.
The order to scrap all Hornets in May 1955 was received with some surprise as No.80's aircraft were maintained in tip top condition and could have served for many years to come. The axe fell also on the Squadron, which was disbanded on 1st May, to be reformed in Germany when No.214 Squadron was renumbered as No.80 on 1 August 1955, flying Canberra PR Mk 7s.
By the time of their disbandment, all the three squadrons flying in the Far East had received a small number of Hornets F Mk 4. This differed from the Mk 3 in having a smaller fuselage fuel tank so as to accommodate a vertically mounted F.52 camera, turning it into a fighter-reconnaissance machine. Airwork Ltd of Gatwick converted 11 existing F Mk 3s to this configuration, which de Havilland built a short run of 12 examples at Chester, the last of which was delivered to the RAF in June 1952. The Hornet's retirement from service also marked the end of the twin piston-engined fighter from the RAF's inventory. Its sleek lines and excellent performance left an indelible mark on all the pilots who had flown it, especially those who had fired its cannon in anger.

Personnel of No.728 NAS pose in front of one of their Sea Hornets F Mk 20 at Hal Far, Malta, in 1952 (R.J. Caruana)

SEA LEGS FOR THE HORNET

Early in the development stage the possibility of a navalised version had been considered and Specification N.5/44 was written around the standard Hornet with the addition of hydraulically operated folding wings, the addition of a forged steel arresting hook attached to a Vee-shaped frame fitted ahead of the tailwheel (identical to that of the Sea Mosquito), three-point accelerator fittings for rocket assisted take-offs and replacement of the rubber-compression main undercarriage legs with airdraulic shock absorber legs. Heston Aircraft worked on the naval mods which increased total weight by 550lb (250Kg), over half of which consisted of the wing folding mechanism.
A total of seven Hornet F Mk Is were modified to Sea Hornet standards in various guises, with the first (PX212) flying on 19 April 1945. Dummy deck landing trials were performed at RAE Farnborough in May and the first sea trials took place on 10 August of the same year on HMS Ocean, the day that war in the Pacific came to an end. Full naval modifications were incorporated into XP214 and XP219. PX230 was finished to full F Mk 20 standard and was eventually also used as the NF Mk 21 prototype.
An initial order for 64 F Mk 20s was built at Hatfield where TT186, the first production aircraft, flew for the first time on 13 August 1946. It included the larger dorsal fin and the camera hatches in the fuselage sides. This order was completed in summer 1948 with the rolling out of VR892; a second order for 24 F Mk 20s was built at Chester between August 1949 and May 1951.
Specification N.21/45 was issued for a night-fighter development of the Sea Hornet with the aim of replacing the Fairey Firefly then in service. To fulfil such a role it was necessary to add a second cockpit close to the middle fuselage to accommodate a navigator/observer. Apart from the second canopy, the other external feature was the introduction of an ASH radar housed in a lengthened nose thimble fairing. PX230 flew in this guise for the first time on 9 July 1946 still lacking the dorsal fin and folding wings, features that appeared on PX239 shortly afterwards. Sea trials were conducted on HMS Illustrious in October 1948 while the first production aircraft (VV430) had already performed its maiden flight the previous 24 March.
No.801 Naval Air Squadron (NAS) was the only frontline unit of the Fleet Air Arm (FAA) to be equipped with Sea Hornets with the type appearing at Ford early in July 1947. This unit performed a number of deployments on HMS Implacable over the next few years until No.801 re-equipped with Sea Fury FB Mk IIs in March 1951. Three Sea Hornets were loaned to No.806 NAS, together with a Sea Vampire, to form an aerobatic team for a tour of Canada and the United States and embarked on HMCS Magnificent in May 1948. The team performed at the New York International Air Exposition of July-August.
The NF Mk 21 was to see service with a single squadron, No.809 NAS that was formed at Culdrose on 20 January 1949. It performed brief deployments aboard HMS Vengeance until it was land-based at Hal Far, in Malta up to summer of 1952. The following year it returned to sea, embarked on HMS Ark Royal and Eagle serving in the Mediterranean until the unit was re-equipped with Sea Venom F(AW) Mk 20s in 1954, thus marking the end of the Sea Hornet's operational service life.
Second line units that operated Sea Hornets include Nos.703, 736, 738, 759, 771, 778, 787 and 792, together with No.728 Squadron Fleet Requirements Unit base at Hal Far, with the latter continuing to operate the type up to early 1957. Although a number of Sea Hornets had been cocooned and stored during the 1950s it was discovered that they were rotting away internally and all Sea Hornets were scrapped.

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Line-up of Hornets at Butterworth during the short period of amalgamation of Nos.33 and 45 Squadrons RAF. Nearest to the camera is PX306/P, carrying 33 Squadron markings (R.J. Caruana Archives)

De Havilland Hornet F Mk I, PX241, SH•N, No.64 Squadron RAF, 1946. Medium Sea Grey upper surfaces; PRU Blue undersides. Yellow/Blue/White/Red roundels on fuselage; 54" diameter Blue/White/Red roundels above wings. Codes in white; serials in black

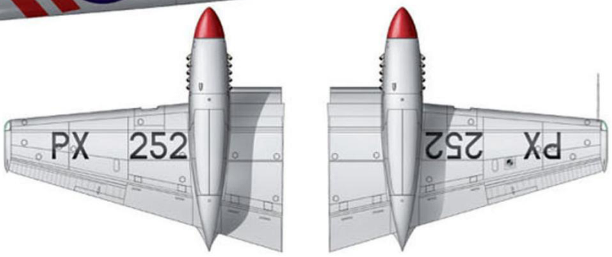
De Havilland Hornet F Mk I, PX275, GO•F, Central Fighter Establishment, West Raynham, 1946/47. Medium Sea Grey upper surfaces; PRU Blue undersides. Blue/Red markings on fuselage and above wings; codes are white while serials are black

De Havilland Hornet F Mk I, PX232, YT•R, No.65 Squadron RAF, 1947. Medium Sea Grey upper surfaces; PRU Blue undersides. Red/Blue roundels on fuselage and above wings; serials in black, codes in white

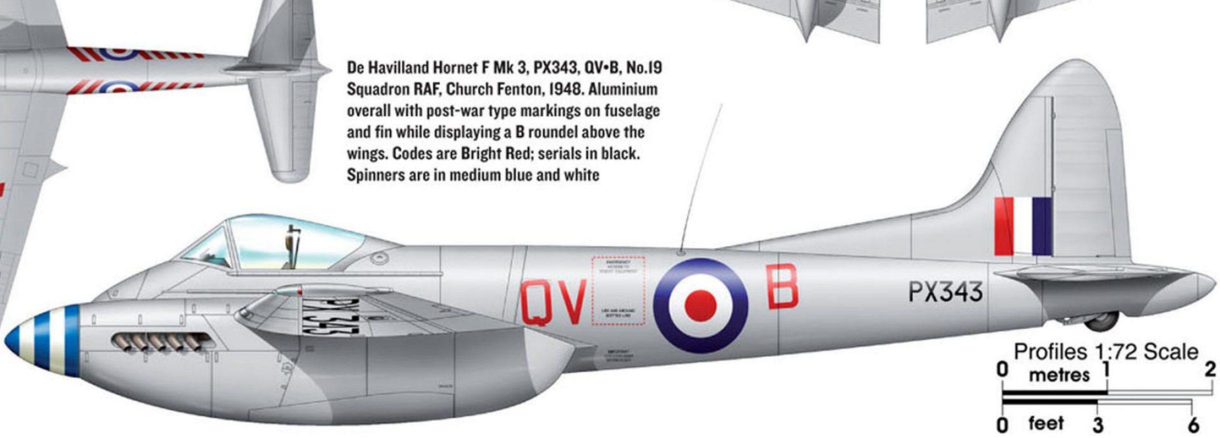
De Havilland Hornet F Mk I, PX284, •H, No.19 Squadron RAF, Church Fenton, 1947. Silver overall with PRU Blue undersides to wings and entire engine cowlings; blue/white spinners. National markings in dull colours; all lettering in black. Blue/White checks flanking fuselage roundels

De Havilland Hornet F Mk I, PX252, flown by Sqn Ldr C. Haw, C.O. of No.65 Squadron, Linton-on-Ouse, 1948. Aluminium overall with standard national markings; red chevrons on fuselage (repeated on top of wings - see scrap view)

Right: Serial presentation below the wings of PX252; generally serves all other examples



De Havilland Hornet F Mk 3, PX343, QV•B, No.19 Squadron RAF, Church Fenton, 1948. Aluminium overall with post-war type markings on fuselage and fin while displaying a B roundel above the wings. Codes are Bright Red; serials in black. Spinners are in medium blue and white



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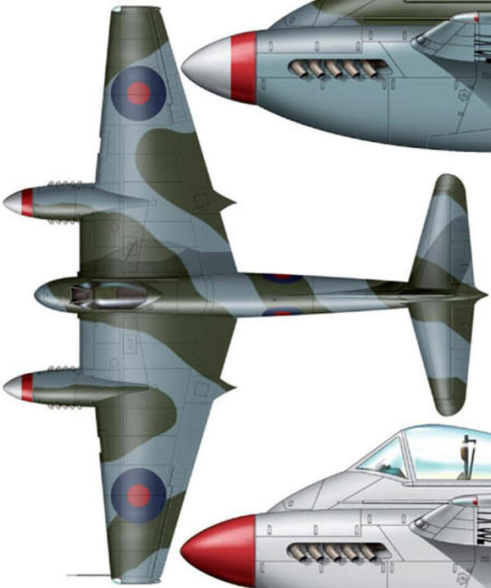
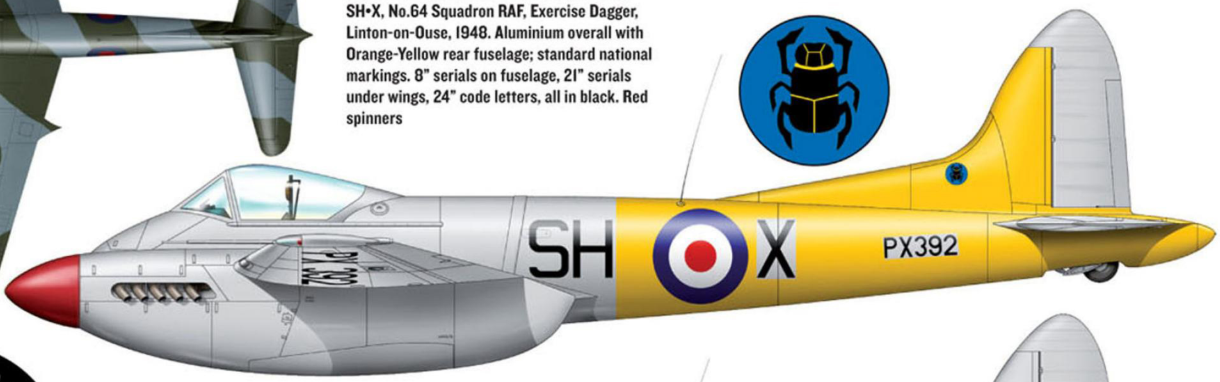
De Havilland Hornet PR Mk 2 prototype, PX216, •R, Photographic Development Unit. PRU Blue overall; no armament in the nose, cameras installed beneath rear fuselage. Blue/Red roundels on fuselage and above wings; code in white, serials in black

Below: De Havilland Hornet F Mk 3, PX302, EB•D, No.41 Squadron RAF, 1949. Medium Sea Grey upper surfaces; PRU Blue undersides. Yellow spinners; standard national post-war markings. Codes and serials are black; note small squadron crest above fin flash



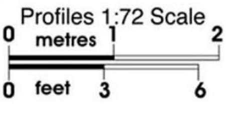
Above: De Havilland Hornet F Mk 3, PX314, EB•C, No.41 Squadron RAF, 1949. Ocean Grey and Dark Green upper surfaces with PRU Blue undersides; Blue/Red national roundels on fuselage sides and above wings. Silver/Red spinners; all lettering in black. Unit badge flanked by a red bar, outlined in black, above fin flash. Top view at far left shows the typical camouflage pattern

Below: De Havilland Hornet F Mk 3, PX392, SH•X, No.64 Squadron RAF, Exercise Dagger, Linton-on-Ouse, 1948. Aluminium overall with Orange-Yellow rear fuselage; standard national markings. 8" serials on fuselage, 21" serials under wings, 24" code letters, all in black. Red spinners



De Havilland Hornet F Mk 3, PX388, YT•H, flown by the C.O. of No.65 Squadron RAF, Linton-on-Ouse. 1949. Aluminium overall with red spinners; all lettering in black. National markings in bright colours. Unit badge on fin fillet

De Havilland Hornet F Mk 3, PX293, QV•A, flown by the C.O. of No.19 Squadron RAF, Church Fenton, Summer 1950. Medium Sea Grey upper surfaces; PRU Blue undersides. Standard post-war markings; medium blue spinner with a white band. Squadron crest is carried above the fin flash flanked by blue/white cheques

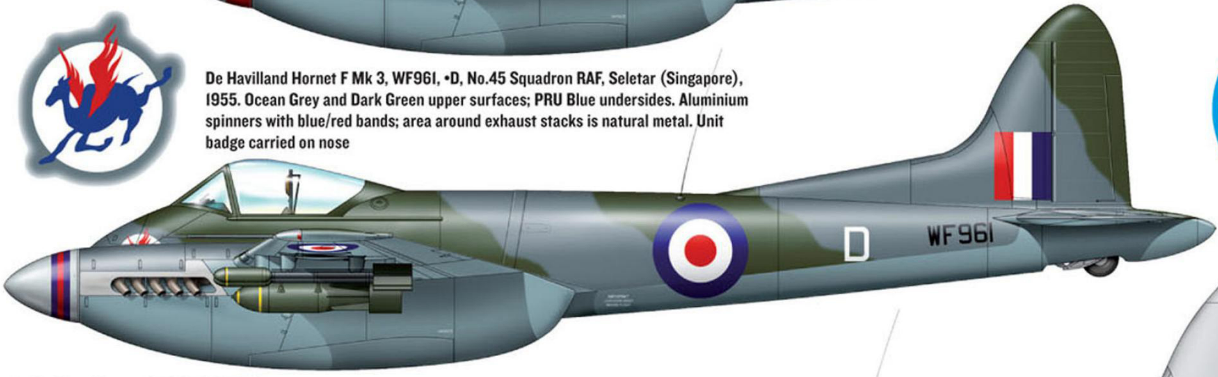


De Havilland Hornet F Mk 3, WB909/N, No.80 Squadron RAF, Kai Tak (Hong Kong), 1954. Ocean Grey and Dark Green on upper surfaces; PRU Blue undersides. National markings in standard positions and colours, although roundel has unusual proportions. Note rudder probably replaced from a Medium Sea Grey/PRU Blue scheme machine. Spinners are blue; bars flanking fuselage roundel in mauve/yellow

Below: De Havilland Hornet F Mk 3, PX306, •P, No.33 Squadron RAF, Butterworth (Malaya), 1955. Finish as at left; white/light blue/red bars, thinly outlined in dark blue, flanking fuselage roundels. Note natural metal area around exhaust stacks and aluminium canopy frame

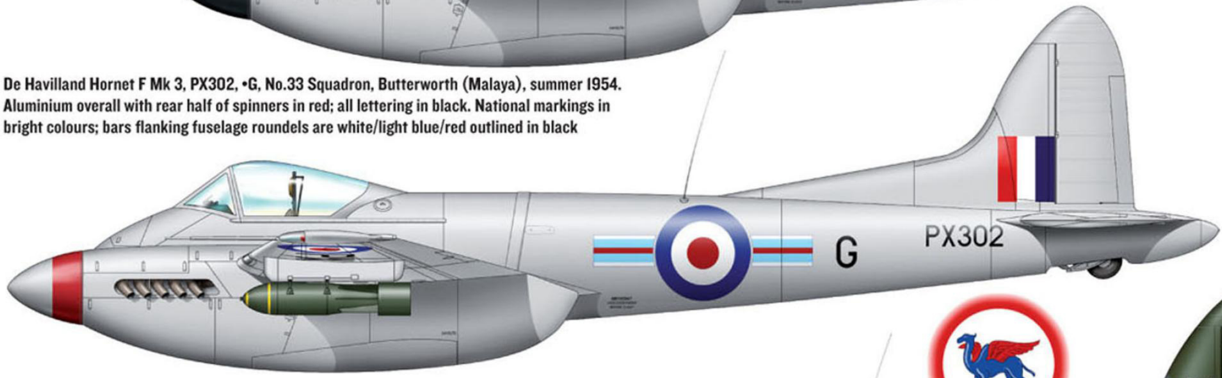
De Havilland Hornet F Mk 3, WF961, •D, No.45 Squadron RAF, Seletar (Singapore), 1955. Ocean Grey and Dark Green upper surfaces; PRU Blue undersides. Aluminium spinners with blue/red bands; area around exhaust stacks is natural metal. Unit badge carried on nose

Model AIRPLANE INTERNATIONAL Original Artwork by Richard J. Caruana © MAI 2011



De Havilland Hornet F Mk 3, VP348, Far East Training Squadron (FETS), Butterworth (Malaya), 1954. Aluminium overall with black spinners; Yellow bands around rear fuselage and chordwise around wings. All lettering in black; national markings in bright colours

De Havilland Hornet F Mk 3, PX302, •G, No.33 Squadron, Butterworth (Malaya), summer 1954. Aluminium overall with rear half of spinners in red; all lettering in black. National markings in bright colours; bars flanking fuselage roundels are white/light blue/red outlined in black

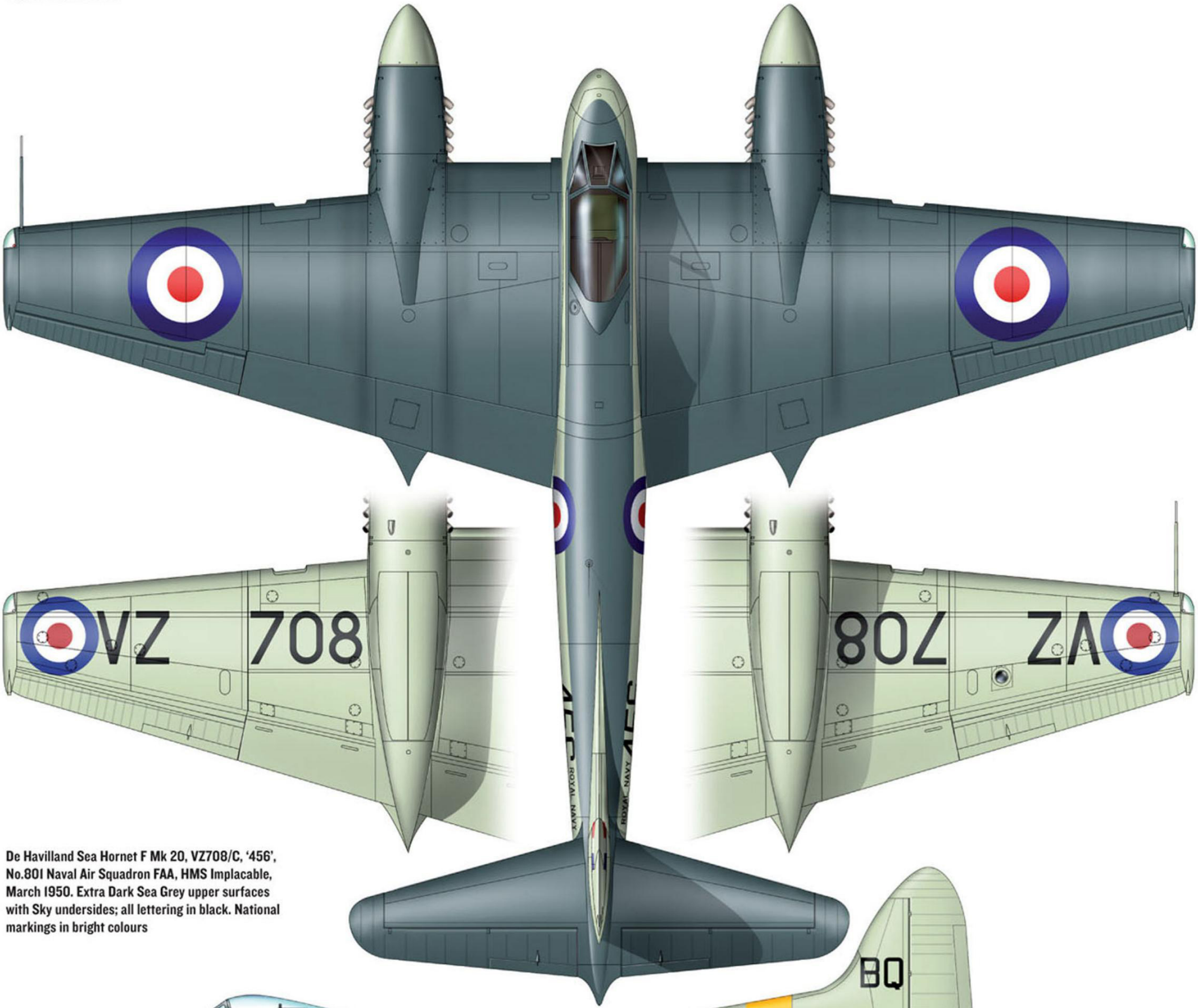


De Havilland Hornet F Mk 4, WF975/N, No.45 Squadron RAF, Butterworth (Malaya), May 1945. Ocean Grey and Dark Green upper surfaces; PRU Blue undersides. Aluminium spinner, natural metal areas around engine exhaust stacks. Standard national markings; red bars with white dumb-bells, superimposed with unit badge, flanking fuselage roundels. Code is white; serials in black

De Havilland Hornet F Mk 4, WB977/B, No.80 Squadron RAF, Kai Tak (Hong Kong), 1953. Aluminium overall, with standard national markings; red spinner. Code and serials in black; mauve/yellow bars flanking fuselage roundel

De Havilland 'Hooked' Hornet, PX212, used for deck landing trials on HMS Ocean, 10 August 1945. Ocean Grey and Dark Green upper surfaces with Yellow undersides; national markings in wartime dull colours. All lettering and spinner in black; Yellow prototype marking aft of fuselage roundel. Blue/White/Red roundels above wings

Right and below: De Havilland Sea Hornet F Mk 20, VZ708/C, '456', No.801 Naval Air Squadron, HMS Implacable, March 1950. Extra Dark Sea Grey upper surfaces with Sky undersides; all lettering in black. National markings in bright colours



De Havilland Sea Hornet F Mk 20, VZ708/C, '456', No.801 Naval Air Squadron FAA, HMS Implacable, March 1950. Extra Dark Sea Grey upper surfaces with Sky undersides; all lettering in black. National markings in bright colours

1:72 Scale
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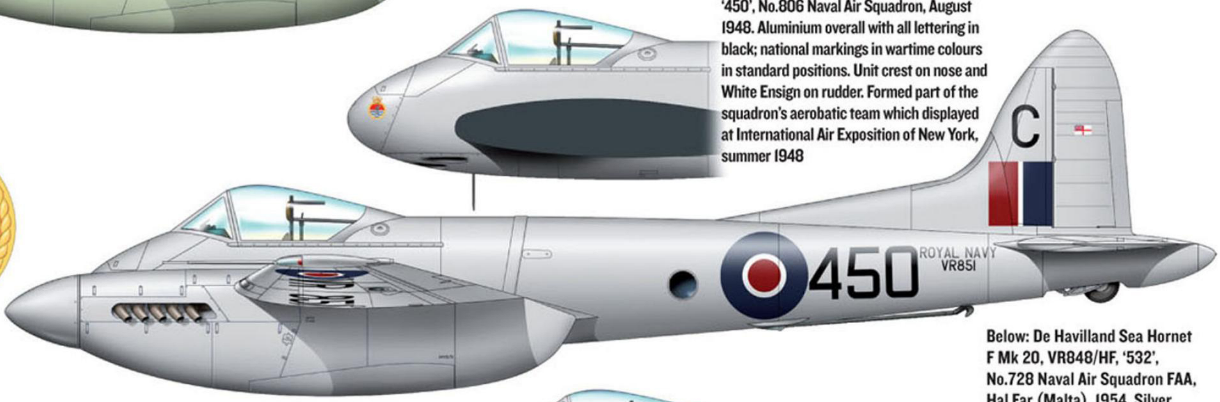
De Havilland Sea Hornet PR Mk 22, VW938/FD, '006', No.703 Naval Air Squadron FAA, Ford, 1950. Extra Dark Sea Grey upper surfaces with Sky undersides; all lettering and spinner in black. National markings in bright colours

De Havilland Sea Hornet F Mk 20, VR851/C, '450', No.806 Naval Air Squadron, August 1948. Aluminium overall with all lettering in black; national markings in wartime colours in standard positions. Unit crest on nose and White Ensign on rudder. Formed part of the squadron's aerobatic team which displayed at International Air Exposition of New York, summer 1948



De Havilland Sea Hornet F Mk 20, VR838/FD, '160', No.801 Naval Air Squadron FAA, RNAS Ford, 1947. Aluminium overall with all lettering in black; Blue/White/Red national markings in all positions. Unit crest on nose

Below: De Havilland Sea Hornet F Mk 20, VR848/HF, '532', No.728 Naval Air Squadron FAA, Hal Far (Malta), 1954. Silver overall with black anti-dazzle panels ahead of cockpit and on inner top faces of engine nacelles; yellow spinners and flash on fin, the latter thinly outline in black. Post-war national markings in six positions; all lettering in black

De Havilland Sea Hornet NF Mk 21, VW960/A, '483', No.809 Naval Air Squadron FAA, HMS Eagle. Extra Dark Sea Grey upper surfaces and spinners with Sky undersides; all lettering in black. White Ensign (waved) on fin fillet; national markings in bright colours in six positions

De Havilland Sea Hornet NF Mk 21, VX250/Q, '485', No.809 Naval Air Squadron FAA, HMS Indomitable, 1952. Extra Dark Sea Grey upper surfaces and spinners with Sky undersides; all lettering in black. Post-war style national markings in bright colours in six positions; unit crest on nose

Model Airplane International
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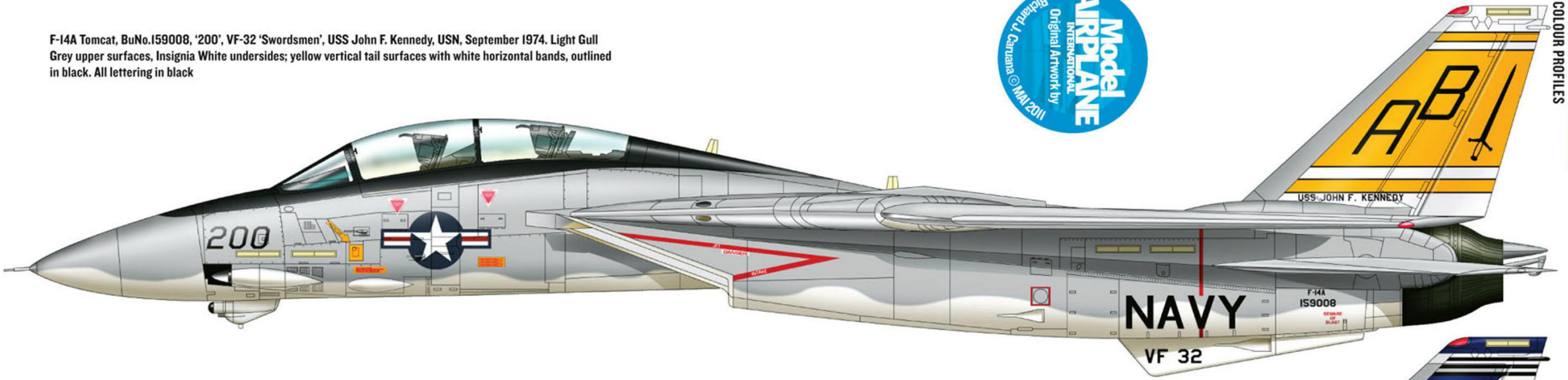
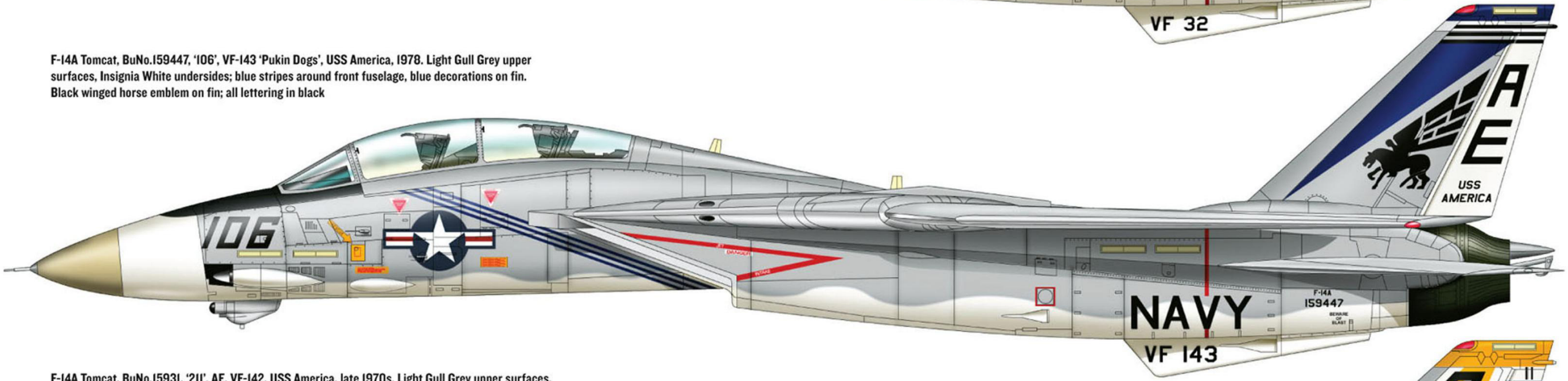
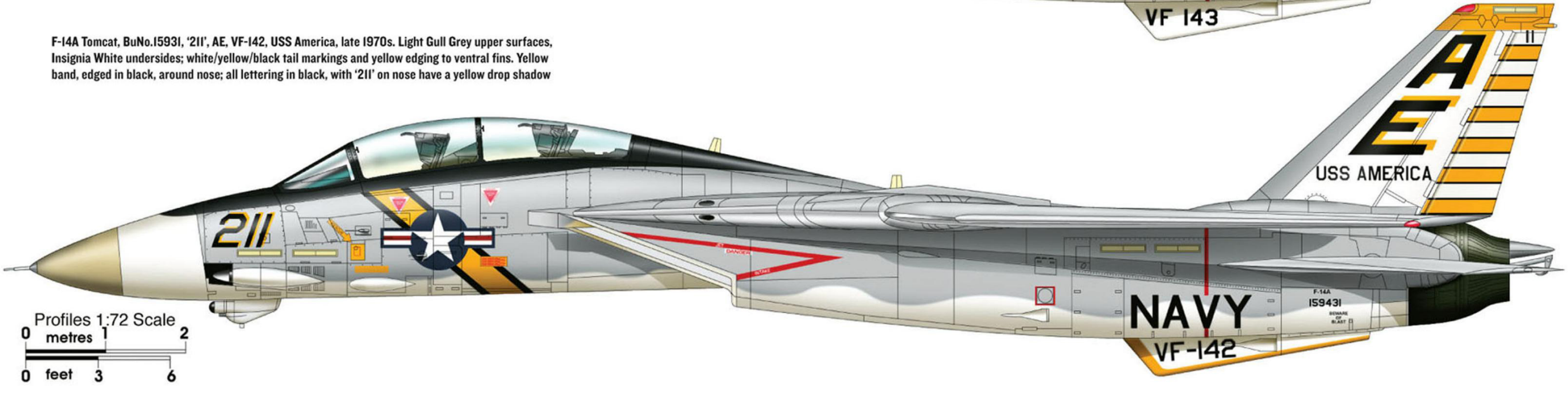
F-14A Tomcat, BuNo.159008, '200', VF-32 'Swordsmen', USS John F. Kennedy, USN, September 1974. Light Gull Grey upper surfaces, Insignia White undersides; yellow vertical tail surfaces with white horizontal bands, outlined in black. All lettering in black



F-14A Tomcat, BuNo.159447, '106', VF-143 'Pukin Dogs', USS America, 1978. Light Gull Grey upper surfaces, Insignia White undersides; blue stripes around front fuselage, blue decorations on fin. Black winged horse emblem on fin; all lettering in black



F-14A Tomcat, BuNo.15931, '211', AE, VF-142, USS America, late 1970s. Light Gull Grey upper surfaces, Insignia White undersides; white/yellow/black tail markings and yellow edging to ventral fins. Yellow band, edged in black, around nose; all lettering in black, with '211' on nose have a yellow drop shadow



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Below & Below Left: F-14A Tomcat, BuNo.160325, 3-6027, 72nd TFS, TFB-7, IRIAF, early 1980s. Top surfaces in a wavy pattern of Tan FS.20400, Dark Brown FS.30140 and Dark Green FS.34079; undersides in Light Grey FS.36622. Roundels on air intakes, above port and below starboard wings; all lettering in black. Upper surface camouflage pattern is shown below left

Model AIRPLANE INTERNATIONAL
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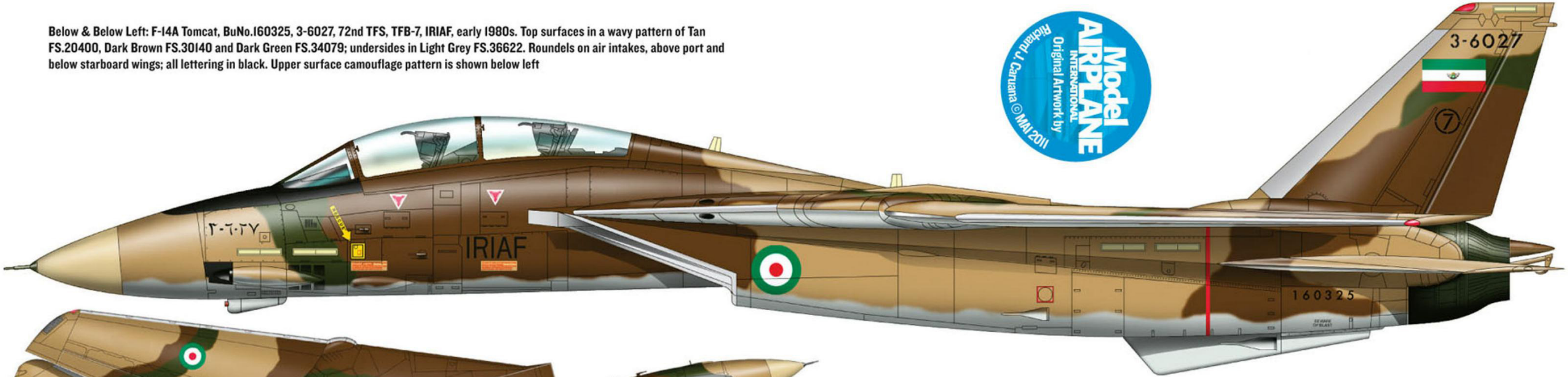
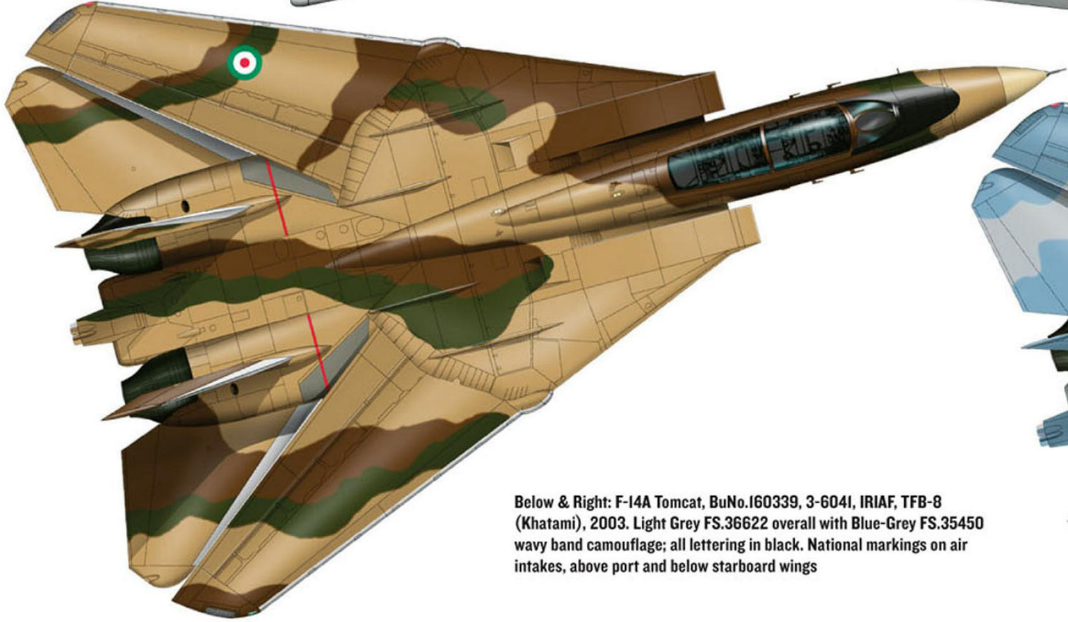
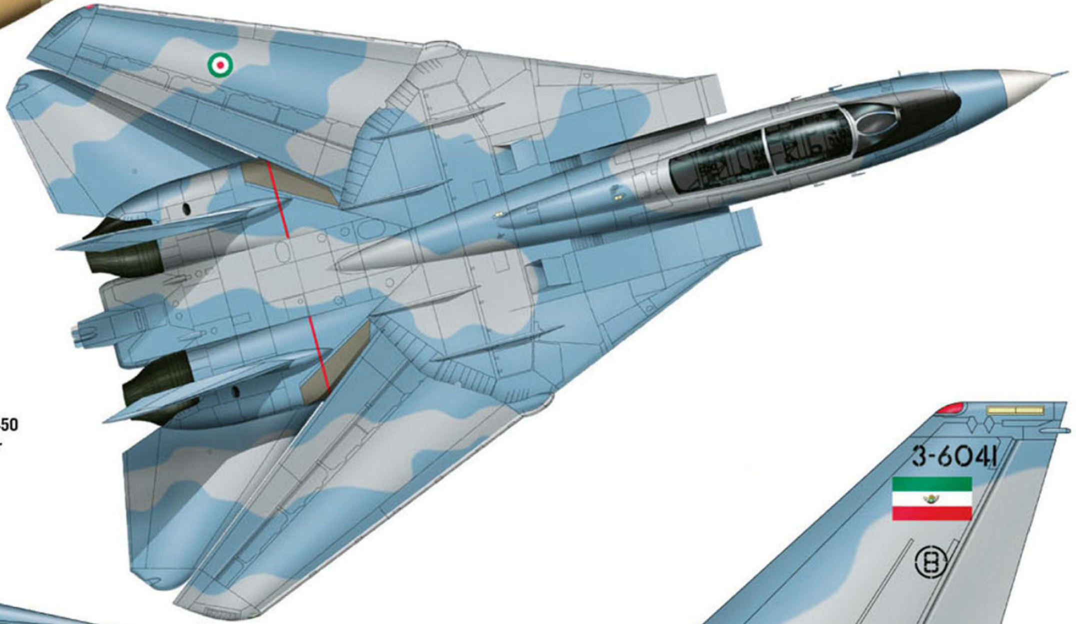
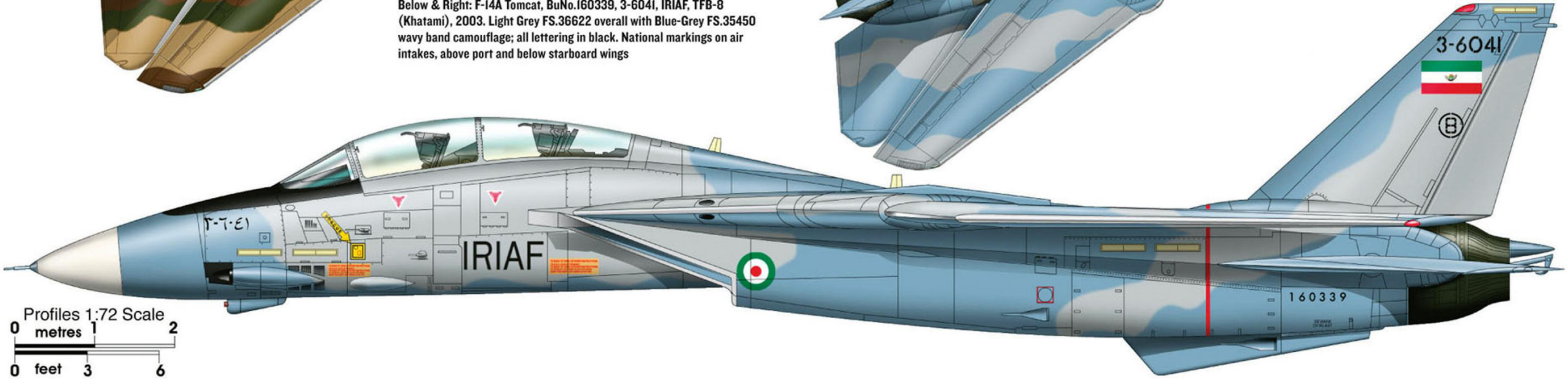




Below & Right: F-14A Tomcat, BuNo.160339, 3-6041, IRIAF, TFB-8 (Khatami), 2003. Light Grey FS.36622 overall with Blue-Grey FS.35450 wavy band camouflage; all lettering in black. National markings on air intakes, above port and below starboard wings





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FOKKER D.XXI

'221' is practically a replica Fokker D.XXI now displayed at the Militaire Luchtvaart Museum at Kamp Van Zeist Soesterberg, that incorporates some original parts. The aircraft carries the 'neutrality' post-1940 markings. Via R.J. Caruana

While Dr-Ir Erich Schatzki, Chief Engineer of the NV Nederlandsche Vliegtuigenfabriken Fokker and his team at the Papaverweg establishment in Amsterdam were engrossed in their design work for a new fighter during the early spring of 1935, they failed to introduce innovative features appearing on other contemporary fighter aircraft. A feeling of uncertainty hung over most of the world at that time, forcing leading aviation manufacturers to divulge less and less about their developments. Thus, the new generation of high performance fighters took the rest of the aeronautical fraternity by surprise when made their public debut. The Fokker D.XXI was one that missed this leap in technological advancement. That it still found a niche in aviation history is more of a credit to the skill and determination of Finnish pilots that to its designers.

The Air Division of the Koninkijk Nederlands Indisch Leger (KNIL - Royal Netherlands Indies Army) issued a specification for a simple fighter aircraft which could be easily maintained in the areas where this air arm operated, that is in hot and humid climates at air bases with very very basic facilities. The demand on performance was unrealistically low-key, especially in view of what the eventual opposition — Japan — was already developing and insistence was made for a simple, sturdy design of typical Fokker manufacture, with a welded steel tube fuselage structure and wooden wings fitted with fixed undercarriage.

Surely the small Fokker design team had some indication of what was going on in the Messerschmitt factories in Germany and Supermarine in England, where aircraft were being manufactured with a new technique involving metal stressed skin monocoque fuselages and metal wings. However, KNIL's requirements came first. By that time Fokker had a successful reputation with its products in export markets, especially small foreign air arms who had similar, simple requirements. The new fighter, therefore, was to be designed as an international commercial venture. Dr Schatzki instructed the design team to incorporate a number of features that the KNIL had not specified, but which eventually proved advantageous in Fokker's export drive. These included easy installation of different power plants without lengthy or costly modifications, and the possibility of offering the new aircraft with a retractable undercarriage.

A monoplane layout and enclosed cockpit were the only semblance of modernity with which the new Fokker fighter, designated D.XXI, was to be endowed. The wing was built on two wooden box spars with plywood ribs that were then skinned with a special bakelite and plywood sheeting. This resulted in a wing possessing a very smooth finish broken only by the ailerons which consisted of fabric covered metal frames. Hydraulically-operated split flaps occupied the entire trailing edge between ailerons and fuselage centre-section.

The fixed undercarriage comprised cantilever oleo-pneumatic struts enclosed in Elekton fairings while the wheels were semi-enclosed in similarly formed spats. It is interesting to note that, heeding KNIL requirements for ease of maintenance on the field, Fokker incorporated footholds on top of the front of the wheel spats thus providing easy access to ground crews servicing the wing guns. Alternate inward retractable undercarriage units were also offered by Fokker, a feature which found no favour with any prospective customers. A differential wheel braking system operated by compressed air was provided for the main wheels while the tailwheel was linked to the rudder but could be disengaged by the pilot.

Armament according to the KNIL specification was to consist of one 7.92mm Browning M-36 with 500 rounds offset to starboard in the fuselage and two similar weapons with 300 rounds each in the wings. Here, too, the Fokker team preferred to be flexible and made it possible to install alternatively 7.92mm FN-Browning guns or even 20mm Madsen, Oerlikon or Hispano cannon.

The fuselage was of typical Fokker construction consisting of welded chrome-molybdenum tube structure, fabric covered aft of the cockpit while the forward section and the fuselage aft upper decking was covered by Elekton detachable panels. This meant that, with the exception of the rear lower end, the whole fuselage skinning could be detached for easy access to all internal equipment. A single fuel tank with a capacity of 350 litres (77 gallons) was positioned just aft of the engine bulkhead. The cockpit was comfortable, with all instruments and controls easily accessible. A turn-over pylon was positioned at the rear of the pilot's headrest. The pilot was protected from the elements by a Plexiglass canopy which afforded easy access as its port half hinged down onto the fuselage. In an emergency this canopy was jettisonable in flight. First-aid kit, radio and battery were conveniently positioned behind the pilot's seat.

Horizontal tail surfaces were fabric-covered metal-framed structures strengthened by a strut underneath and rigging wire to the rudder bar on top; elevators were externally mass-balanced. Fin and rudder were similarly constructed, the latter incorporating a trim tab and, on export versions only, a white tail light.

The Dutch Government specification called for a 645hp Bristol Mercury VI-S nine-cylinder air-cooled radial engine, an example of which was installed in the prototype. Completed in February of 1936 and carrying serial number FD-322, the first D.XXI was transported by road to Welschap airfield where, after ground-running tests, it made its first flight on 27 February 1936 with Emil Meinecke at the controls. The test pilot, of Czechoslovak origin, was delighted to report that the aircraft handled beautifully and further tests confirmed that the little fighter met all KNIL requirements with a wide margin. Flight trials continued between 1 May and 23 July 1936 and on 22 January 1937, FD-322 was dismantled for shipment to the Netherlands East Indies where it was extensively tested.

Reports of these tests indicated that the aircraft was unsuited for tropical climes as the canvas covering and even the metal internal frame were prone to deterioration. It was also noted that the D.XXI was only marginally faster than the 'Glen Martin' bombers. The elation of the Fokker design team was soon dampened by a serious re-thinking of KNIL's strategies in the East Indies where the fighter — it was assumed — would offer little effective deterrence over such a wide territory. The Royal Netherlands Indies Army then opted for attack aircraft, and as it had only contracted for the prototype of the D.XXI, the new aircraft's future hung in the balance. The only consolation was that KNIL recommended the type for home use.

This was not seen in good light by the Defence Ministry. The day after the D.XXI's first flight, Col P.W. Best, commander of the Luchtvaart Afdeling (LVA) reported that in his opinion,the Fokker D.XXI's maximum speed of 411km/hr (255mph) did not constitute a sufficient step forward over the performance of the D.XVII already in service. With contemporary bombers potentially reaching speeds in excess of 400km/hr it was proposed that a new fighter for home defence would require at least a 50km/hr speed advantage. Moreover, Col Best argued, the Koolhoven F.K.55, which was under development, would provide that speed with a wide margin, thus making the Fokker D.XXI obsolete. What did not transpire at that time was the fact that the Fokker D.XXI was already in hand, while the F.K.55 was still an unknown

A pair of Fokker D.XXIs, 213 and 215, escort a Fokker T.5 bomber over open countryside. R.J. Caruana Archives

quantity — the latter finally proved to be an abysmal failure.
Notwithstanding such unfavourable comments the LVA commissioned a detailed and intensive flight test programme of the Fokker D.XXI on 24 November that commenced the following day and was concluded on 10 January 1937. Two days later the official report was issued finding no objection to the procurement of a number of Fokker D.XXIs by the LVA as long as some modifications were incorporated. These consisted of minimal changes that brought the aircraft in line with general LVA standards and concerned instrumentation layout, improvement in overall finish of fabric and Elekton covered surfaces, and improvements to rudder and aileron actuation cables.
Fokker did not wait for official Dutch orders to ensure the commercial viability of the D.XXI. In May of 1936 the firm was already represented at the Stockholm Aviation Fair where the aircraft was offered with fixed or retractable undercarriage together with a choice of engines including the1,100hp Hispano-Suiza 14 Ha, the 925hp Hispano Suiza 12 Ycrs and the 830hp Bristol Mercury VII air-cooled radials. But its most saleable quality was considered to be its unsophisticated construction which made it an ideal candidate for licence production virtually anywhere in the world.
First foreign interest came from Finland with an order for seven D.XXI powered by the Bristol Mercury and an option for a manufacturing licence for a further 14 aircraft by the Valtion Lentokonetehdas (State Aircraft Factory) on 18 November, 1936. Finland not only took the option in March of the following year but increased the number to 35 two months later.
Finland was also interested in the retractable undercarriage variant but after calculating the additional weight necessary for the retraction gear, doors and other equipment performance figures predicted only a marginal increase in speed and a drop in rate of climb. Finland decided for the fixed wheel version which powered by the Bristol Mercury VIII, was expected to attain a speed of 460km/hr (286mph). The Finnish Air Force specified an armament of two 7.9mm FN-Browning M-36 machine guns mounted in the fuselage and another similar pair in the wings. Polish-built Mercury engines were acquired for the seven examples to be built by Fokker, the engines driving a three-bladed two-pitch propeller. Fokker, on its part, included all the LVA recommended modifications onto the aircraft destined for Finland, delivery of which commenced in the summer of 1937.
Funds for the procurement of 36 D.XXIs for the LVA were voted by the Dutch Government, these to be virtually identical to the ones which Fokker was building for Finland except for the British-built Mercuries while the quartet of machine guns were all housed in the wings in two pairs. The first LVA example (Serial No 212) was flown during summer of 1938 and proved to be faster than predicted, to the elation of the LVA Committee's test pilot, Dr-Ir van der Maas. The only problems concerned the coarse pitch of the propellor which drastically reduced performance at high altitudes. The aircraft went for acceptance trials at Schiphol in July and was officially accepted later that month. The second and third Fokker D.XXIs (213 and 214) were delivered early in August with two more being delivered before the end of the month, all aircraft going to Soesterberg. The last D.XXI (No 247) was to be delivered on 3 March 1939 but was retained by Fokker for further development and was only handed over on 8 September of that year. Foreign attention was further highlighted when a lightened Fokker D.XXI (No 217) was flown by T H Leegstra establishing a new Dutch altitude record on 3 September 1938 of 11,353m.
The Danish Air Force also showed an interest in the D.XXI and two pattern examples (J-41 and J-42) designated III-J were purchased from Fokker powered by Mercury VIII engines, together with a licence production for a further 10 to be built at the Army Aviation Troops' Workshops (Hoerens Flyvertroppernes Vaerksteder) at Klovermarken. All examples could be fitted with a pair of Madsen 20mm cannon in underwing packs in addition to a pair of 7.9mm FN-Brownings in the fuselage. These cannon packs were manufactured by the Dansk Industri Syndikat. The two Fokker-built aircraft arrived in Denmark on 29 April 1938. Production began in 1939 with the first three examples being delivered during that year. These joined 2.Eskadrille at Værløse with the remainder being ready by April of 1940.
On 9 April 1940, Luftwaffe Bf 110s strafed Værløse where 2.Eskadrille had eight D.XXIs on strength. These machines could do very little to repel such an attack; one was destroyed and a further four were damaged. It is reliably known that three aircraft were rebuilt and stored at Kløvermarken until they were seized by the Wermacht in August of 1943, some being tested in Germany; their ultimate fate is unclear.
A less known customer was the Republican Government of Spain where the first licence-production example (actually a pattern aircraft) was assembled by Hispano Aviación at San Vincente del Raspeig, Alicante. This aircraft is believed to have flown with a Soviet M-25 power plant before the production line was overrun by the Nationalists.
The morning of the German invasion of Holland, 10 May 1940, 29 D.XXI were available to the LVA, of which only three had been fitted with radio equipment. These were assigned to 1e Jachtvliegtuigafdelingen (JaVA) with eleven aircraft based at De Kooy, 2e JaVA based at Schiphol with 10 aircraft and 5e JaVA based at Ypenburg with eight aircraft. Of the latter, only one D.XXI survived the first wave of the attack whilst on its part, 5e JaVA claimed a Bf 110, a Bf 109, a He 111 and three Ju 52/3ms. By the end of the first day, De Kooy, Schiphol and Ypenburg had to be evacuated. All D.XXIs were formed into one JaVA at Buiksloot.
The number of D.XXIs became less and less as aircraft were caught on the ground during Luftwaffe air raids, leaving only twelve serviceable machines by the second day. Operations from Buiksloot continued until the capitulation of Holland four days later. This was, however, not the end of the Fokker D.XXI story.
When the Soviet forces invaded Finland on 30 November 1939 all 35 examples mentioned earlier had been constructed. The delivery of seven Fokker-built examples (FR-76 to FR-82) delivered in November 1937, and designated Series I were followed by two series of locally built batches, Series II (FR-83 to FR-96) and Series III (FR-97 to FR-117), all built by Valtion Lentokonetehdas. These were machines. The lack of Mercury engines created a problem for the new production line as all such engines had been earmarked for Blenheims. However, some 80 Pratt & Whitney Twin Wasp Junior R-1535 fourteen-cylinder twin-row radials were available, and here the original Fokker design's flexibility proved to take a variety of engines vindicated its original design concept..
With the installation of the new engine, the fuselage mounted FN-Brownings had to be transferred to the wings while the increased weight of the Wasp necessitated the enlargement of the vertical tail surfaces. The opportunity to redesign the horizontal tail surfaces was also taken, these retaining their external shape but incorporating a revised hinge-line, while a second reinforcement strut was also introduced. Rear canopy glazing was also extended. Known as the Series IV, these aircraft were also fitted with a Revi 3C reflector gunsight.

Cockpit interior of the Fokker D.XXI R.J. Caruana Archives

assigned to TLeLv 24 and gained the dubious honour of being the first D.XXIs to fire their guns in anger. One of the great Finnish aces, Lt Eino Luukkanen, flying FR-104 recorded the first official kill with the type on 1 December 1939 destroying a Soviet Tupolev SB in the vicinity of Jääski. During this so-called "Winter War" many volunteer Danish and Swedish pilots flew the D.XXI with the Ilmavoimat (Finnish Air Force), the aircraft endearing itself to its pilots earning the nickname of Ukkomokkeri (Old Man Sledge).
Until the armistice of 13 March 1940, the D.XXI formed the backbone of aerial defence, its ease of maintenance and sturdy construction bearing great rewards. The results were staggering: over 180 enemy aircraft had been shot down for the loss of only 12 D.XXIs, half of these were lost in landing accidents. The aircraft not only proved to be an excellent gun platform but managed to operate under conditions that would have grounded almost any other fighter existing at the time.
Finland reinstated the production of the Fokker D.XXI in 1941 at the State Aircraft Factory. HLeLv 24 exchanged its Fokker D.XXIs for Brewster Buffalos, the old machines going to HLeLv 32 and some to HLeLv 30 (joining that unit's Hurricanes) until the arrival of new-built Being some 25hp short of the original Mercury, the Wasp version proved underpowered, slower and more difficult to handle than the original D.XXI. However, all 50 new machines on order (FR-118 to FR-167) were ready during 1941. When the "Continuation War" began on 25 June of that year, HLeLv 32 had 19 examples of the new fighter but these were soon relegated to reconnaissance duties with HLeLv12 and 14.
Another small batch of five examples (FR-171 to FR-175), known as Series V, were later added.
History has a habit of performing amazing "about turns": the Finns experimentally completed FR-167 with a retractable undercarriage. As far as is known this was the only D.XXI so fitted. The undercarriage legs, wheels, retraction mechanism and even doors seem to this author highly similar to those of the Fiat G.50 and it would come as no surprise that these units were actually cannibalised from such a machine, of which several were in service with the Finnish Air Force at the time. It is also known that two years later this machine was rebuilt with a standard fixed-wheel version.
As late as 1944, Finland was still building the Fokker D.XXI while the last example was retired from service as late as 1951.

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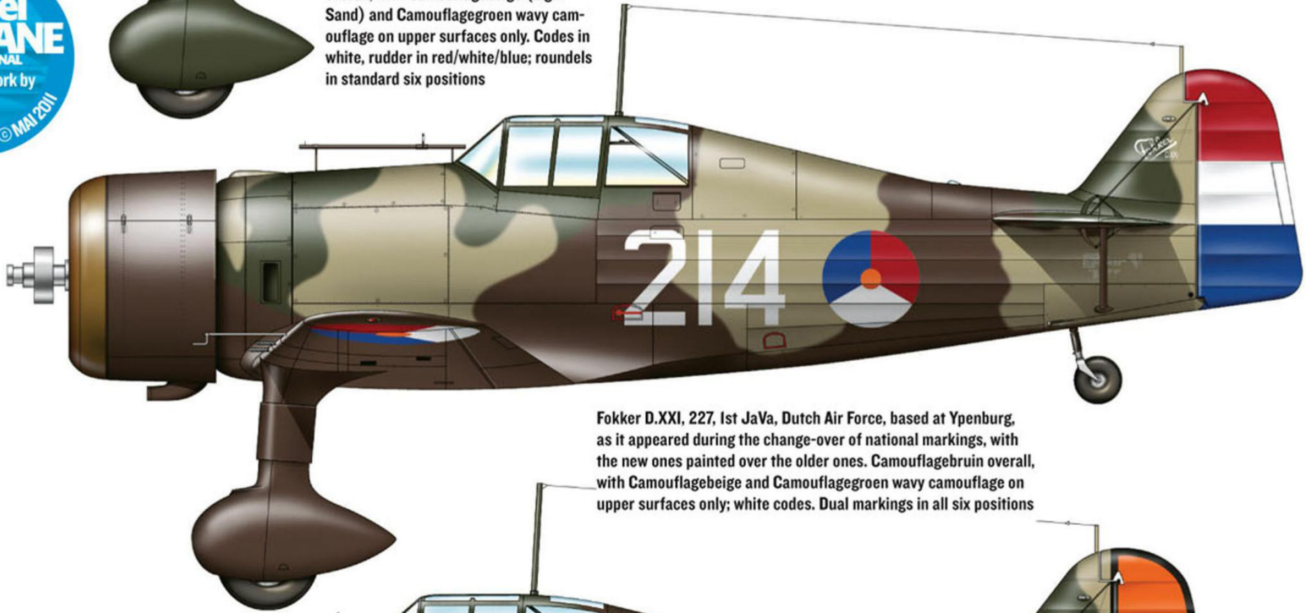
FOKKER D.XXI

Fokker D.XXI prototype, FD-322. Camouflagegroen (Green-Grey FS.34077) overall finish with red/white/blue rudder stripes; white codes on fuselage. National markings in standard six positions

Model AIRPLANE INTERNATIONAL Original Artwork by Richard J. Caruana © MAI 2011

Fokker D.XXI, 214, 2nd JaVa, Dutch Air Force, based at Schipol. Camouflagebruin overall, with Camouflagebeige (Light Sand) and Camouflagegroen wavy camouflage on upper surfaces only. Codes in white, rudder in red/white/blue; roundels in standard six positions



Fokker D.XXI, 227, 1st JaVa, Dutch Air Force, based at Ypenburg, as it appeared during the change-over of national markings, with the new ones painted over the older ones. Camouflagebruin overall, with Camouflagebeige and Camouflagegroen wavy camouflage on upper surfaces only; white codes. Dual markings in all six positions

Fokker D.XXI, 234, 2nd JaVa, Dutch Air Force, Schiphol, spring 1940. Camouflagebruin overall, with Camouflagebeige and Camouflagegroen wavy camouflage on upper surfaces only; white codes. Orange and black triangles in six positions, rudder in same colours; 'three mice' emblem on cowling both sides, with the mice always facing forward

PROFILES 1:48 Scale

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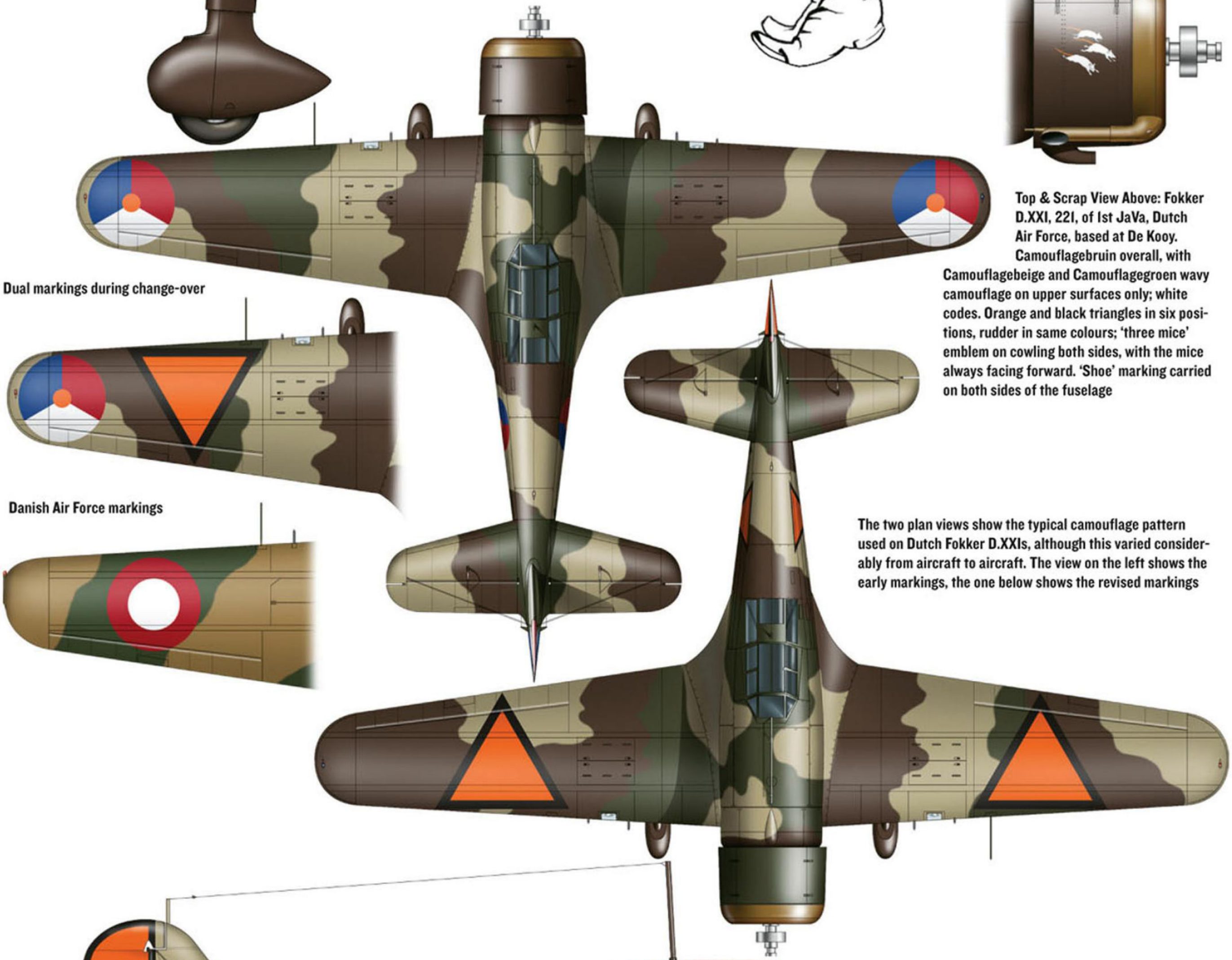
Top & Scrap View Above: Fokker D.XXI, 221, of Ist JaVa, Dutch Air Force, based at De Kooy. Camouflagebruin overall, with Camouflagebeige and Camouflagegroen wavy camouflage on upper surfaces only; white codes. Orange and black triangles in six positions, rudder in same colours; 'three mice' emblem on cowling both sides, with the mice always facing forward. 'Shoe' marking carried on both sides of the fuselage



Dual markings during change-over

Danish Air Force markings

The two plan views show the typical camouflage pattern used on Dutch Fokker D.XXIs, although this varied considerably from aircraft to aircraft. The view on the left shows the early markings, the one below shows the revised markings

Fokker D.XXI, 237, 2nd JaVa, Dutch Air Force, Schiphol, 1939. Camouflagebruin overall, with Camouflagebeige and Camouflagegroen wavy camouflage on upper surfaces only; white codes. Orange and black triangles in six positions, rudder in same colours

PROFILES 1:48 Scale

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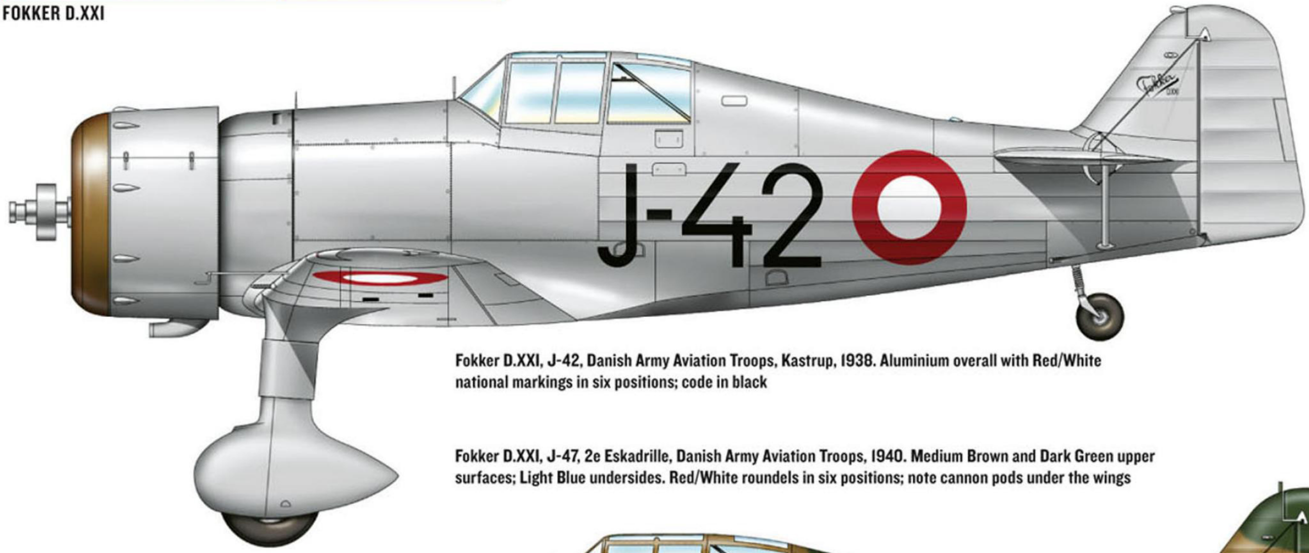
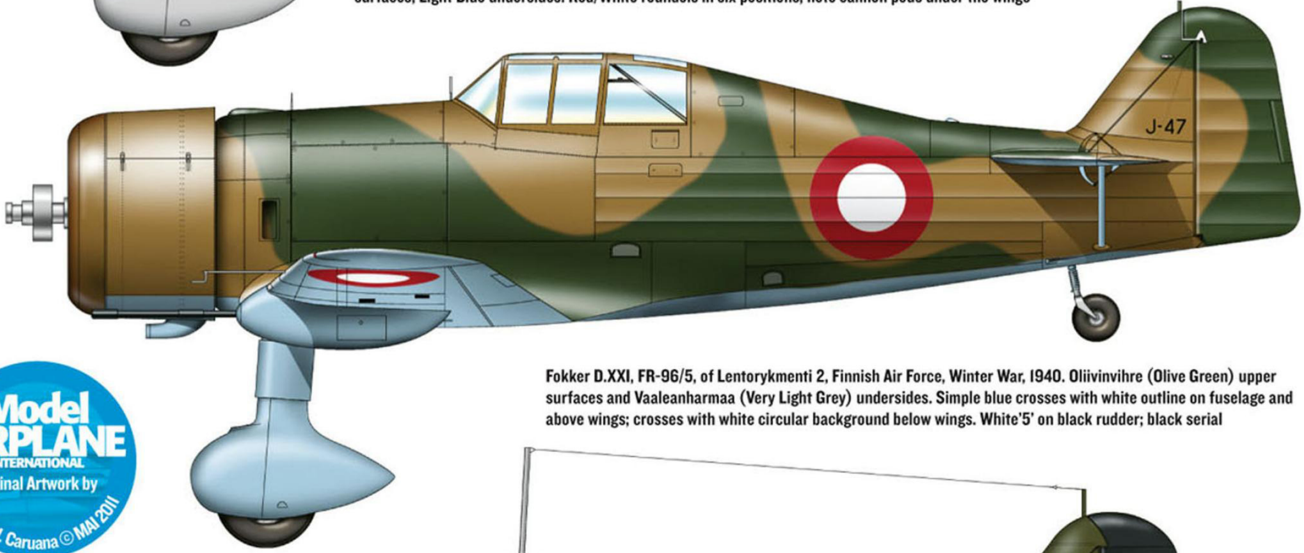
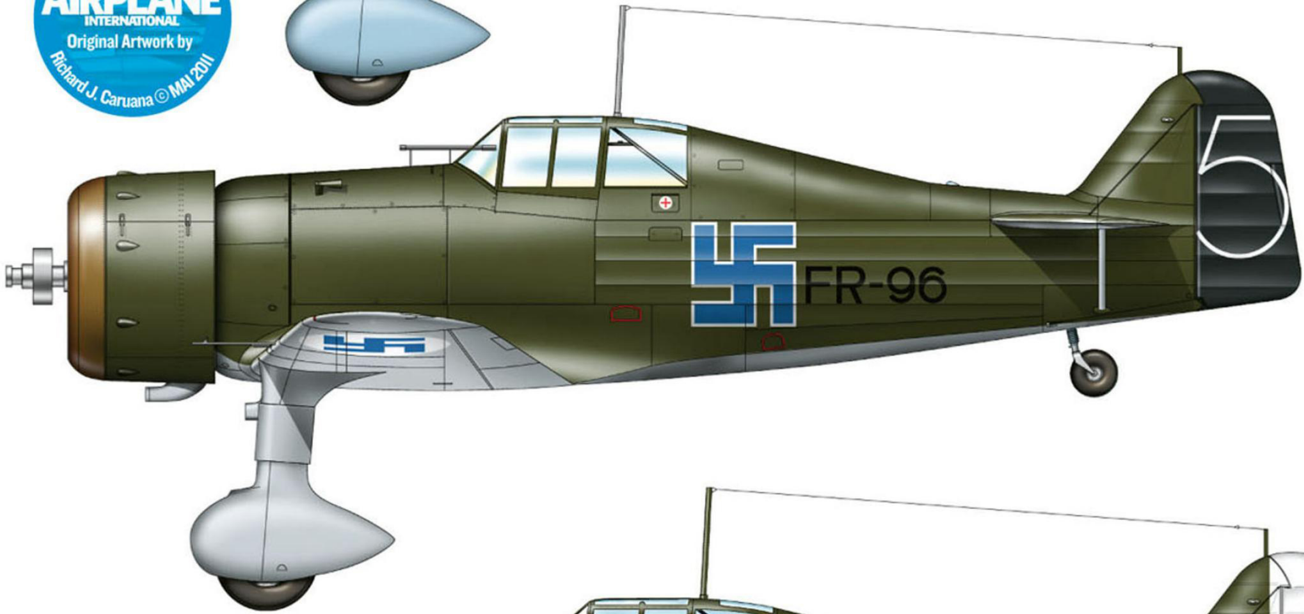


Fokker D.XXI, J-42, Danish Army Aviation Troops, Kastrup, 1938. Aluminium overall with Red/White national markings in six positions; code in black

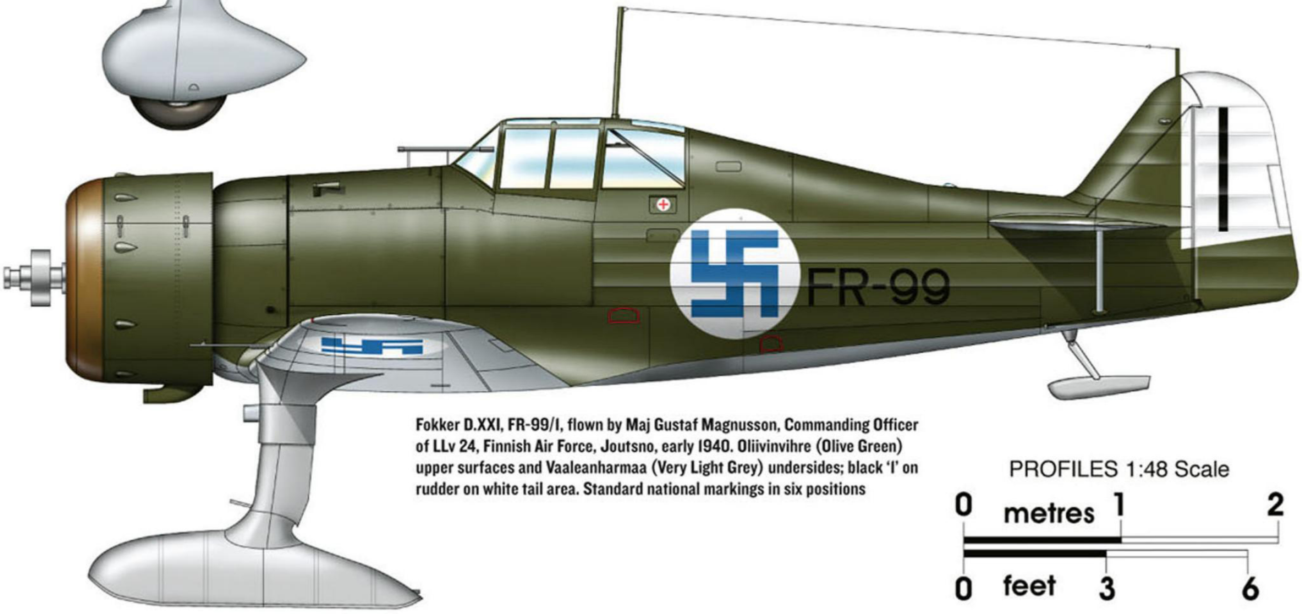


Fokker D.XXI, J-47, 2e Eskadrille, Danish Army Aviation Troops, 1940. Medium Brown and Dark Green upper surfaces; Light Blue undersides. Red/White roundels in six positions; note cannon pods under the wings

Model AIRPLANE INTERNATIONAL Original Artwork by Richard J. Caruana © MAI 2011



Fokker D.XXI, FR-96/5, of Lentorykmenti 2, Finnish Air Force, Winter War, 1940. Oliivinvihre (Olive Green) upper surfaces and Vaaleanharmaa (Very Light Grey) undersides. Simple blue crosses with white outline on fuselage and above wings; crosses with white circular background below wings. White'5' on black rudder; black serial



Fokker D.XXI, FR-99/I, flown by Maj Gustaf Magnusson, Commanding Officer of LLv 24, Finnish Air Force, Joutsno, early 1940. Oliivinvihre (Olive Green) upper surfaces and Vaaleanharmaa (Very Light Grey) undersides; black 'I' on rudder on white tail area. Standard national markings in six positions

PROFILES 1:48 Scale
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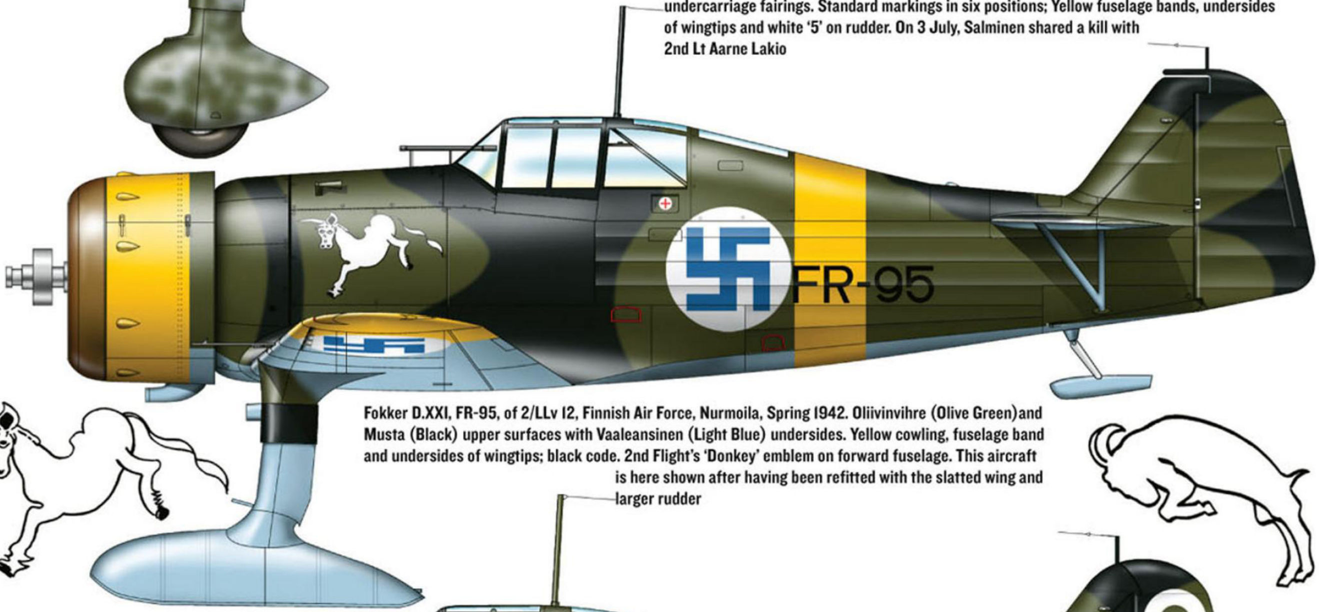
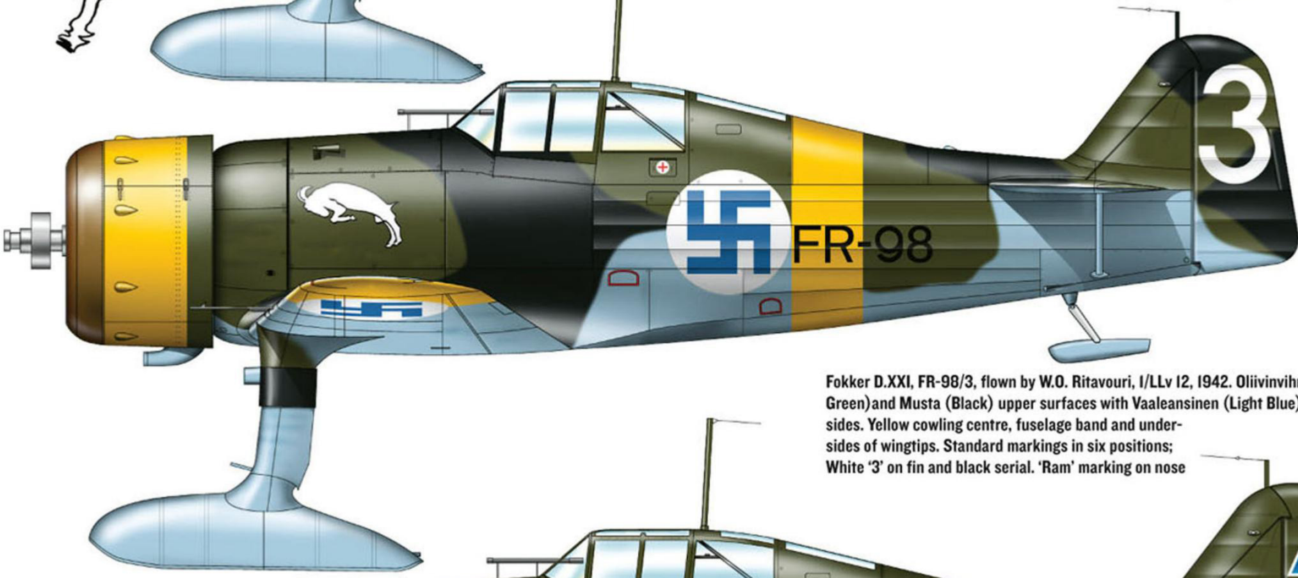
Fokker FR-95/5, flown by S.Sgt Pauli Salminen of 1/LLv 32, Finnish Air Force, early July 1941. Oliivinvihre upper surfaces and Vaaleanharmaa undersides. Note Dark Olive Green mottled onto undercarriage fairings. Standard markings in six positions; Yellow fuselage bands, undersides of wingtips and white '5' on rudder. On 3 July, Salminen shared a kill with 2nd Lt Aarne Lakio



Fokker D.XXI, FR-95, of 2/LLv 12, Finnish Air Force, Nurmoila, Spring 1942. Oliivinvihre (Olive Green) and Musta (Black) upper surfaces with Vaaleansinen (Light Blue) undersides. Yellow cowling, fuselage band and undersides of wingtips; black code. 2nd Flight's 'Donkey' emblem on forward fuselage. This aircraft is here shown after having been refitted with the slatted wing and larger rudder



Fokker D.XXI, FR-98/3, flown by W.O. Ritavouri, 1/LLv 12, 1942. Oliivinvihre (Olive Green) and Musta (Black) upper surfaces with Vaaleansinen (Light Blue) undersides. Yellow cowling centre, fuselage band and undersides of wingtips. Standard markings in six positions; White '3' on fin and black serial. 'Ram' marking on nose

Fokker D.XXI, FR-104, of 3./LLv 24), flown by Lt. "Eikka" Luukkanen in Winter War, December of 1940. Oliivinvihre (Olive Green) and Musta (Black) upper surfaces with Vaaleansinen (Light Blue) undersides. National markings in six positions. Light Blue '4' outlined in white on rudder

PROFILES 1:48 Scale

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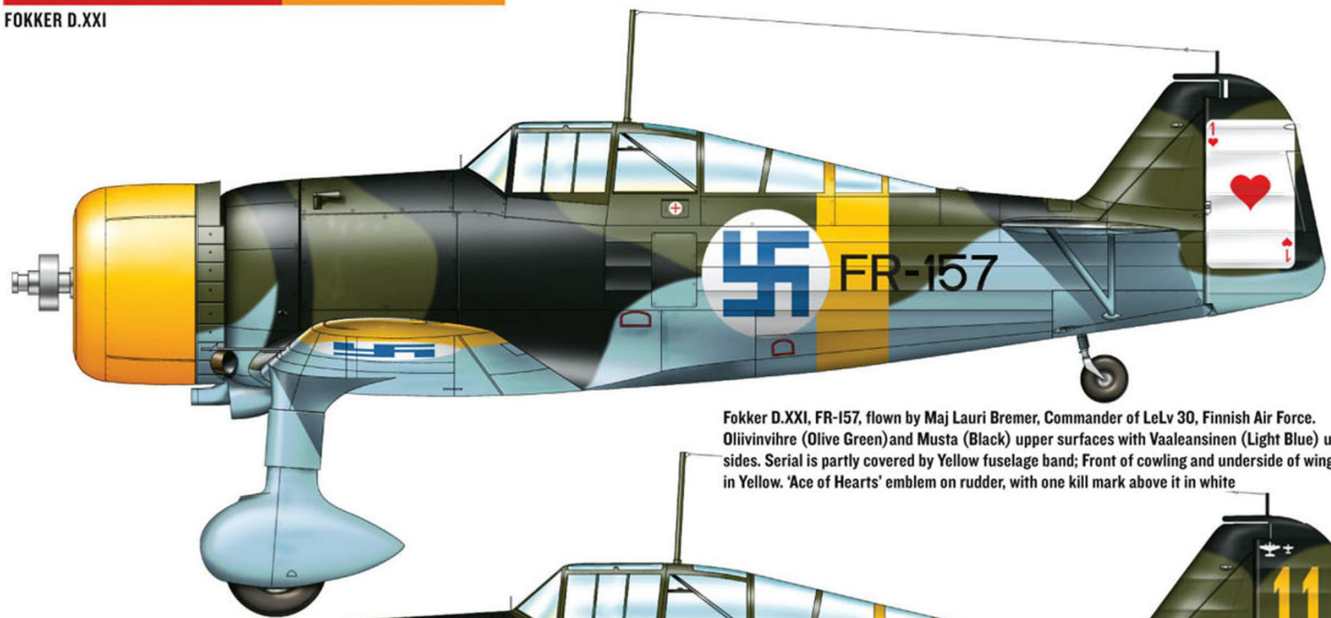
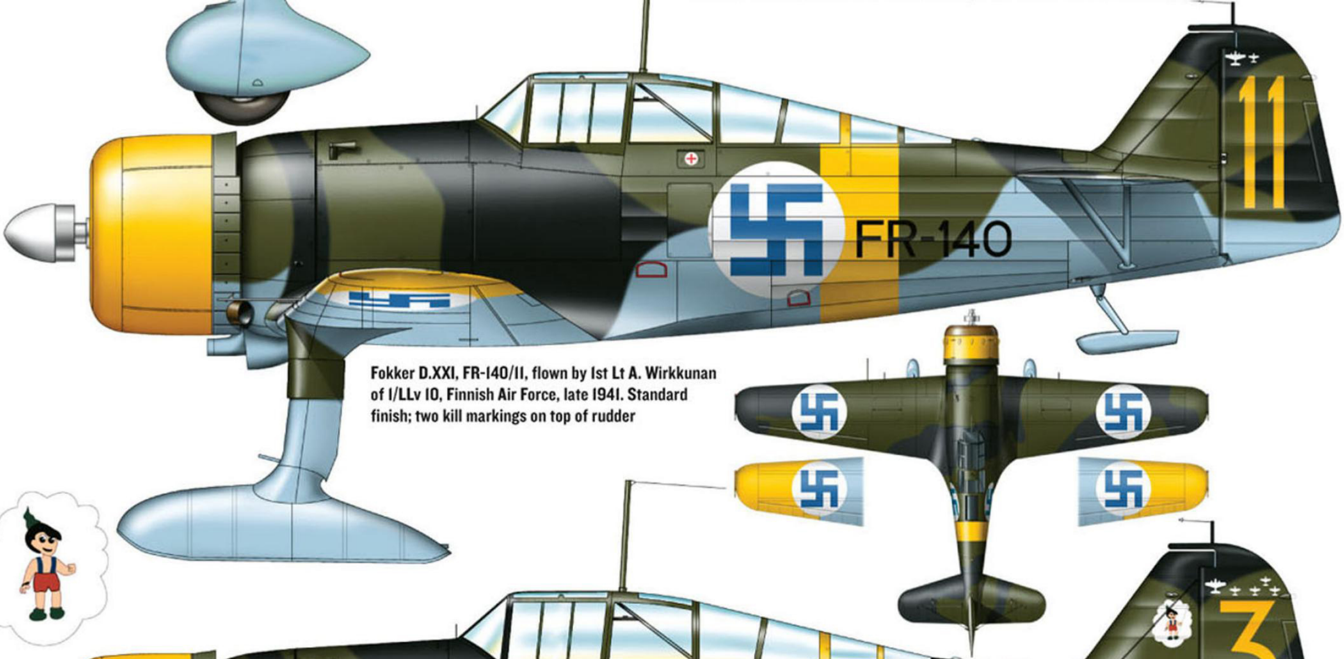
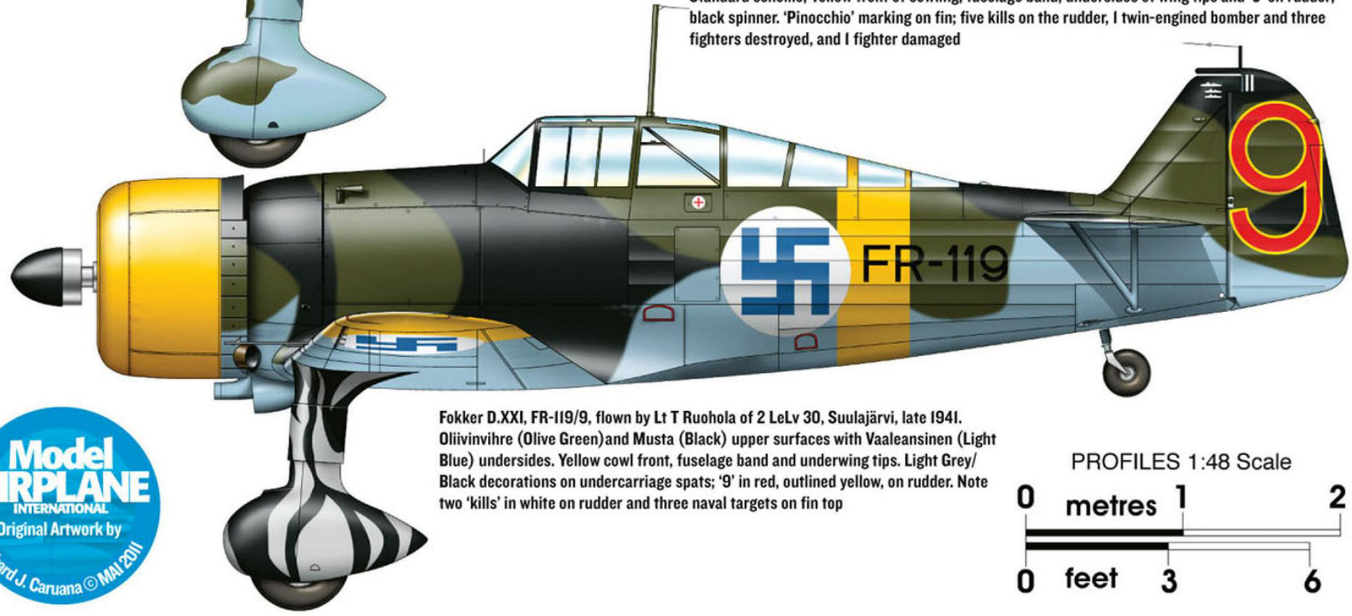


Fokker D.XXI, FR-157, flown by Maj Lauri Bremer, Commander of LeLv 30, Finnish Air Force. Oliivinvihre (Olive Green)and Musta (Black) upper surfaces with Vaaleansinen (Light Blue) undersides. Serial is partly covered by Yellow fuselage band; Front of cowling and underside of wingtips also in Yellow. 'Ace of Hearts' emblem on rudder, with one kill mark above it in white



Fokker D.XXI, FR-140/11, flown by 1st Lt A. Wirkkunan of 1/LLv 10, Finnish Air Force, late 1941. Standard finish; two kill markings on top of rudder

Fokker D.XXI, FR-148/3, flown by Capt Martti 'Masa' Kalima, of 3/LeLv 30, Finnish Air Force, 1942. Standard scheme; Yellow front of cowling, fuselage band, undersides of wing tips and '3' on rudder; black spinner. 'Pinocchio' marking on fin; five kills on the rudder, 1 twin-engined bomber and three fighters destroyed, and 1 fighter damaged



Fokker D.XXI, FR-119/9, flown by Lt T Ruohola of 2 LeLv 30, Suulajärvi, late 1941. Oliivinvihre (Olive Green)and Musta (Black) upper surfaces with Vaaleansinen (Light Blue) undersides. Yellow cowl front, fuselage band and underwing tips. Light Grey/Black decorations on undercarriage spats; '9' in red, outlined yellow, on rudder. Note two 'kills' in white on rudder and three naval targets on fin top

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PROFILES 1:48 Scale

0 metres 1 2

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Ilyushin Il-2, 'Red 8', 174th ShAP, Leningrad Front, Winter 1941-42. Dark Green AMT-4 and Black upper surfaces with Light Blue Grey AMT-7 undersides; Red/White national markings on fuselage sides, vertical tail surfaces and below wings. Red '8', outlined in white, on rudder

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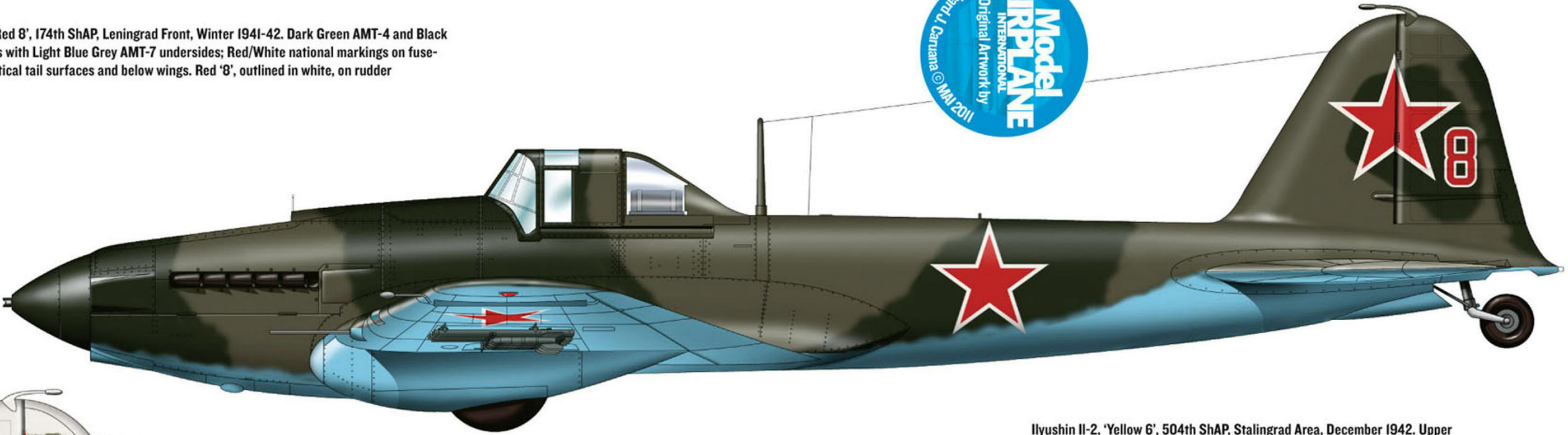
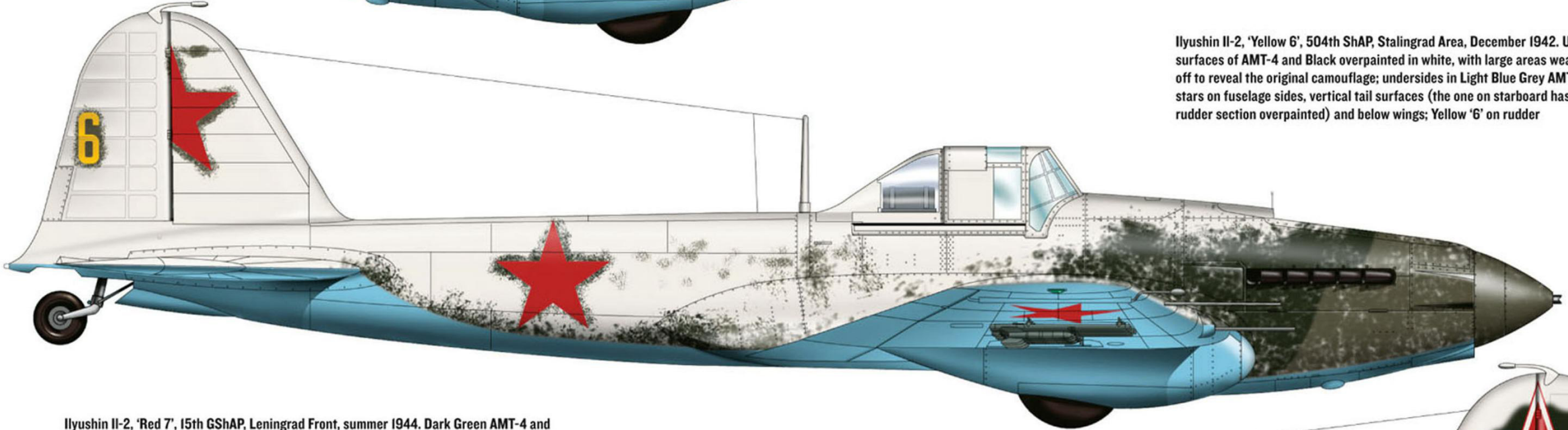
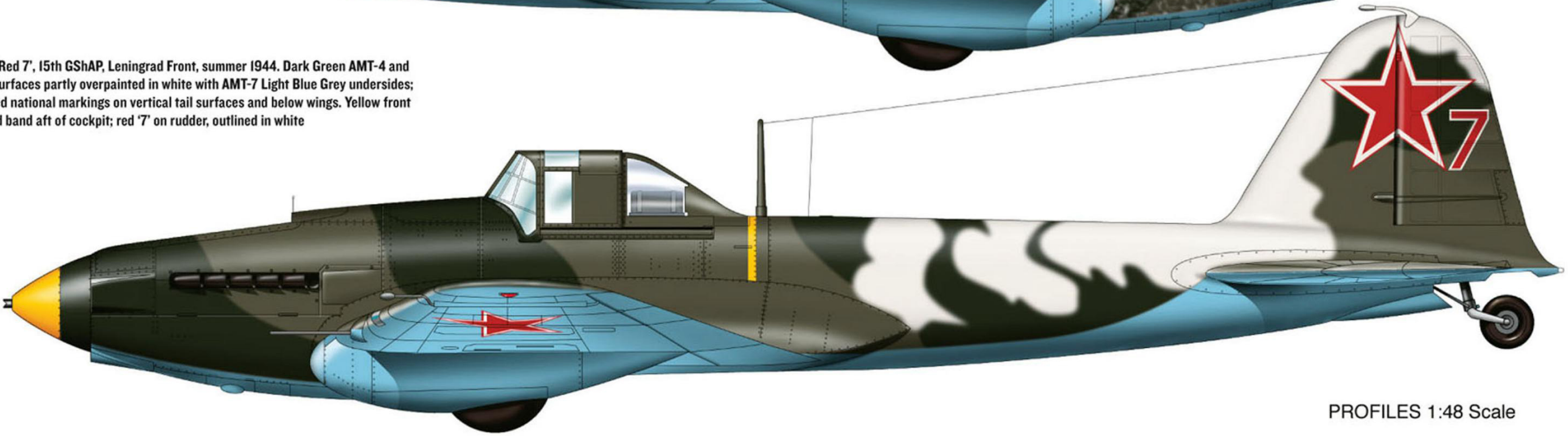


Ilyushin Il-2, 'Yellow 6', 504th ShAP, Stalingrad Area, December 1942. Upper surfaces of AMT-4 and Black overpainted in white, with large areas weathered off to reveal the original camouflage; undersides in Light Blue Grey AMT-7. Red stars on fuselage sides, vertical tail surfaces (the one on starboard has the rudder section overpainted) and below wings; Yellow '6' on rudder

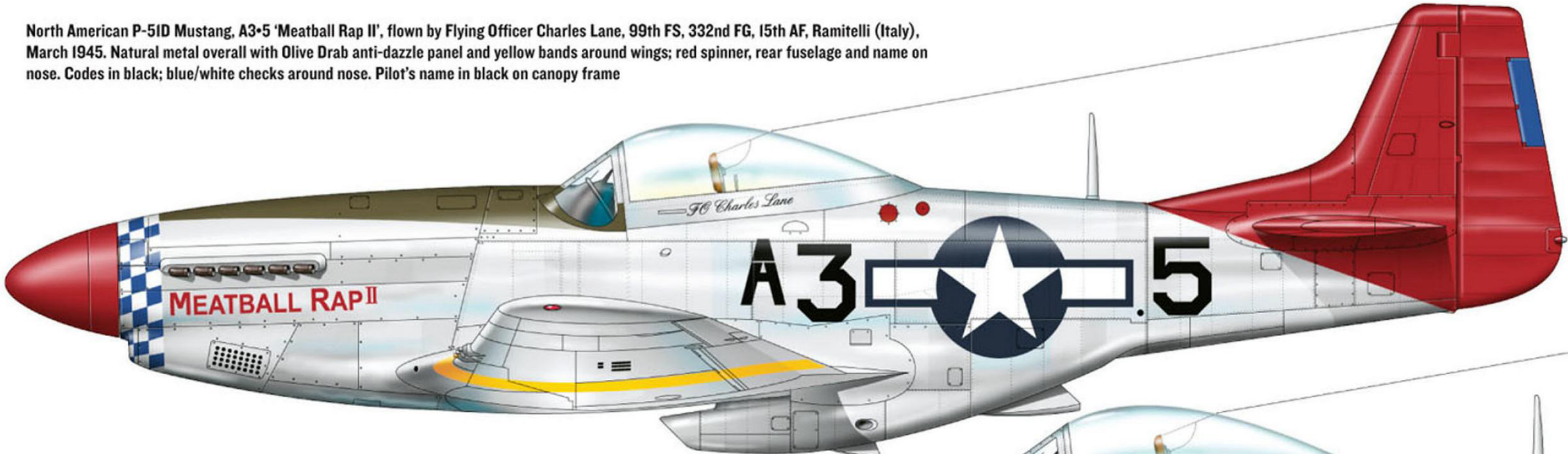


Ilyushin Il-2, 'Red 7', 15th GShAP, Leningrad Front, summer 1944. Dark Green AMT-4 and Black upper surfaces partly overpainted in white with AMT-7 Light Blue Grey undersides; Red/White/Red national markings on vertical tail surfaces and below wings. Yellow front of spinner and band aft of cockpit; red '7' on rudder, outlined in white



PROFILES 1:48 Scale

North American P-51D Mustang, A3•5 'Meatball Rap II', flown by Flying Officer Charles Lane, 99th FS, 332nd FG, 15th AF, Ramitelli (Italy), March 1945. Natural metal overall with Olive Drab anti-dazzle panel and yellow bands around wings; red spinner, rear fuselage and name on nose. Codes in black; blue/white checks around nose. Pilot's name in black on canopy frame



North American P-51D Mustang, 569/7 'Bunnie', flown by Lt Roscoe C Brown (Jr), 100th FS, 332nd FG, 15th AF, Italy 1945. Natural metal overall with Olive Drab anti-dazzle panel and yellow bands around wings; red nose, tail, wing tips, udnercarriage doors and name 'Bunnie' on nose. Two kill markings below windscreen; black '7' on fuselage sides, outlined in red. '569' in black above fuselage national marking

Model AIRPLANE INTERNATIONAL
Original Artwork by
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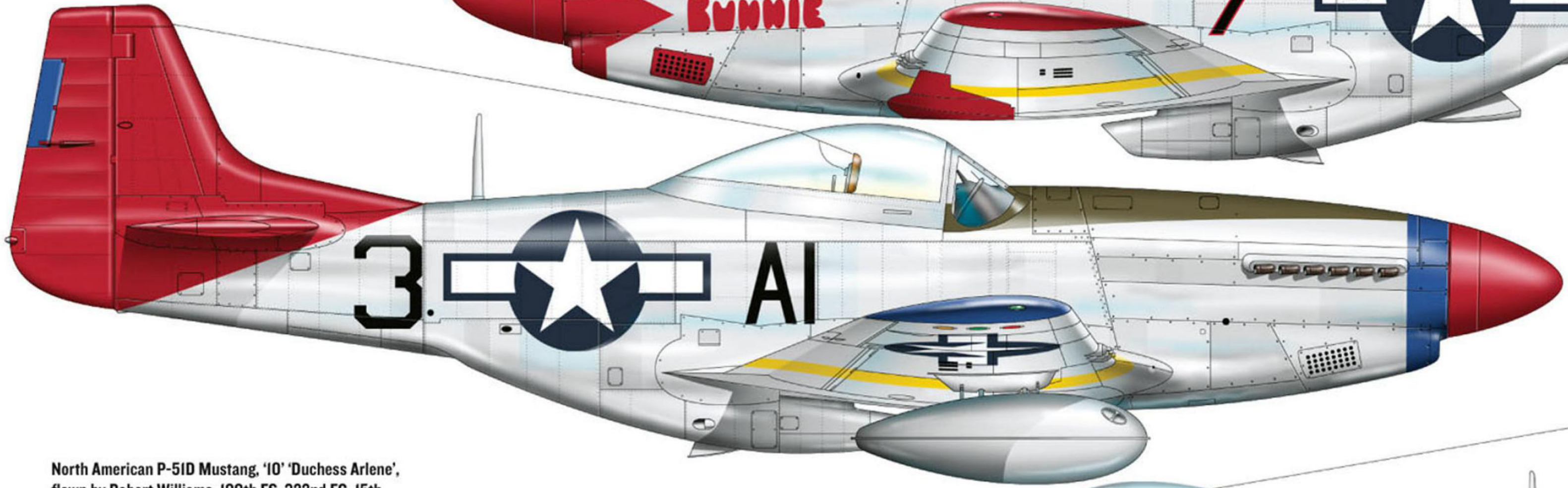
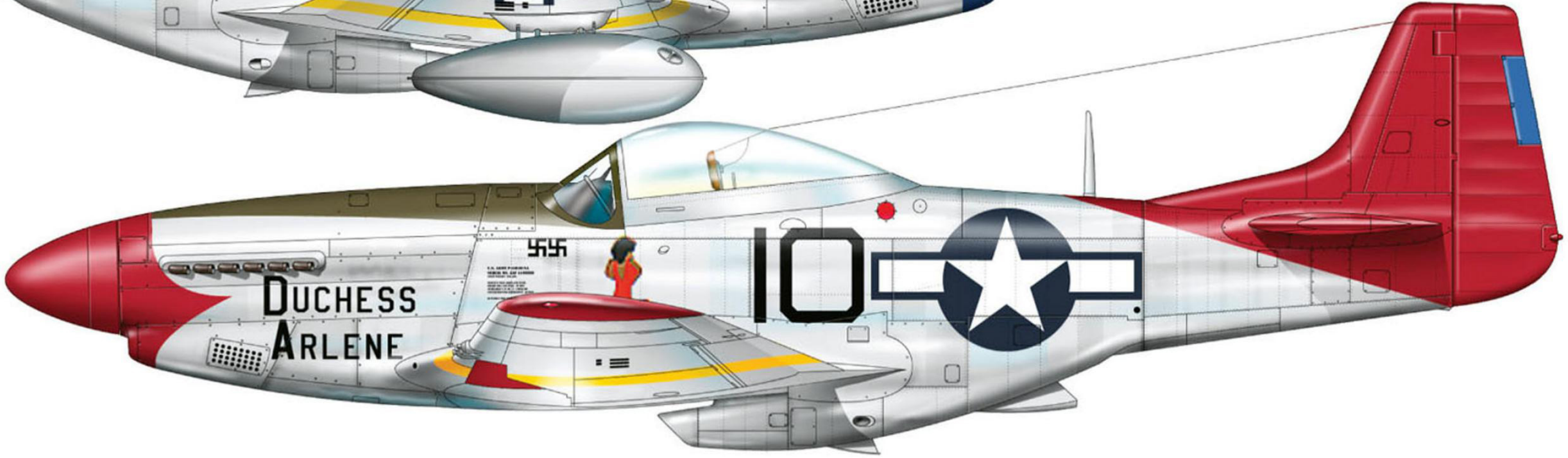
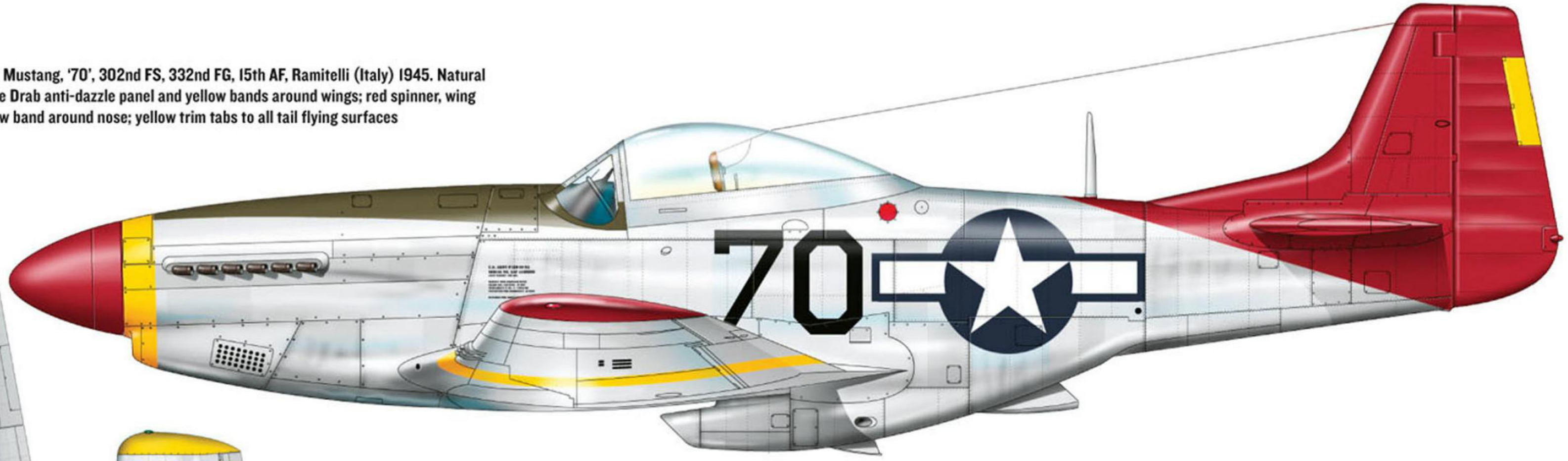
North American P-51D Mustang, AI•3, 99th FS, 332nd FG, 15th AF, Italy, 1945. Natural metal overall with Olive Drab anti-dazzle panel with yellow bands around wings; red spinner, wingt tips and tail unit. Blue band around nose and wing tips



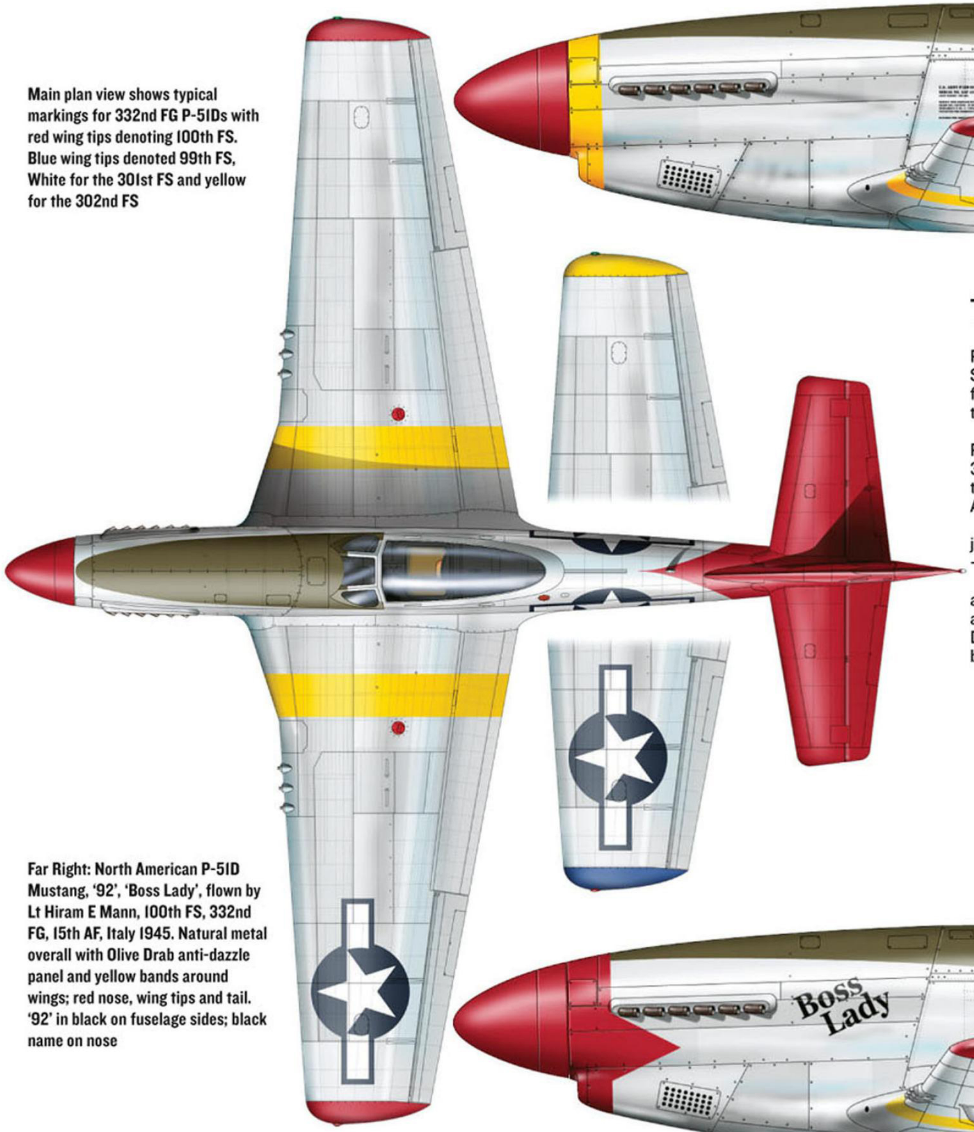
North American P-51D Mustang, '10' 'Duchess Arlene', flown by Robert Williams, 100th FS, 322nd FG, 15th AF, Italy, March 1945. Natural metal overall with Olive Drab anti-dazzle panel and yellow bands around wings; red spinner and nose, wing tips, tail section and main undercarriage doors. Two victory markings under windscreen and coloured lady wearing a red swimsuit under cockpit; 'Duchess Arlene' in black



North American P-51D Mustang, '70', 302nd FS, 332nd FG, 15th AF, Ramitelli (Italy) 1945. Natural metal overall with Olive Drab anti-dazzle panel and yellow bands around wings; red spinner, wing tips and tail unit. Yellow band around nose; yellow trim tabs to all tail flying surfaces



Main plan view shows typical markings for 332nd FG P-51Ds with red wing tips denoting 100th FS. Blue wing tips denoted 99th FS, White for the 301st FS and yellow for the 302nd FS



Tuskagee Airmen and their Red Tail Mustangs

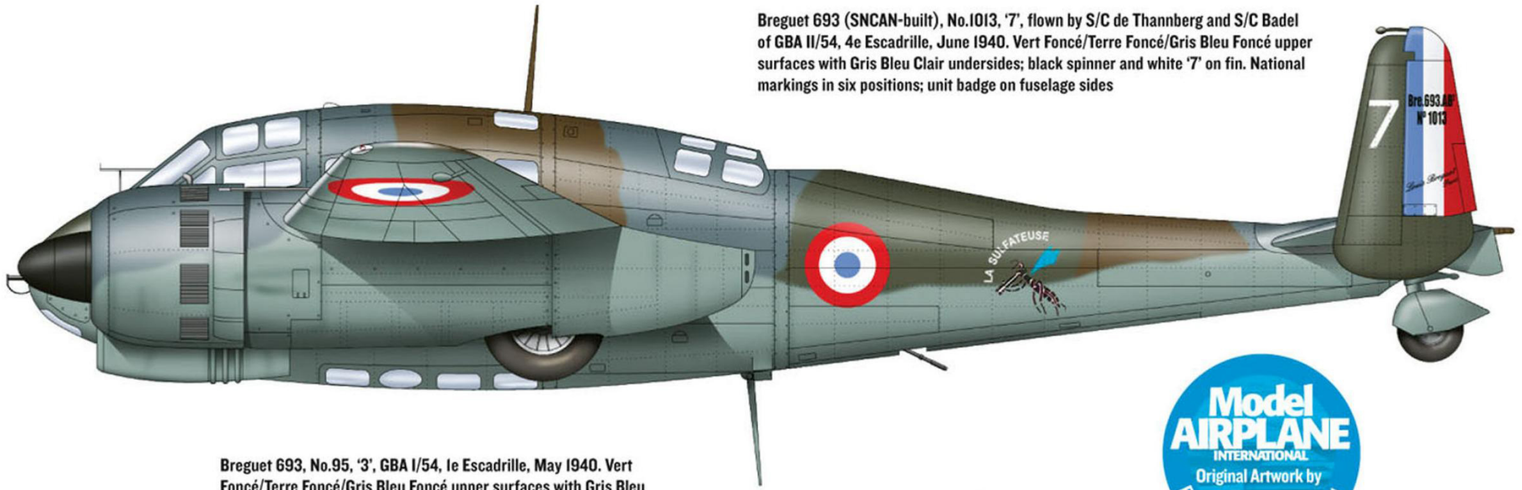
President Franklin D. Roosevelt ordered the formation of an all-Negro flying unit in the Air Corps in 1940. Early in 1941 the 99th Pursuit Squadron was established with 13 pilot candidates, and although training was slow at first, Captain Benjamin O. Davis Jr. became the first pilot from this unit to earn his wings on 2 September. The 100th Fighter Squadron (FS) was established, with pilots graduating from the Tuskagee Institute on 18 March 1942, within the 332nd Fighter Group (FG).

On 31 May 1943, the 99th FS, flying P-40s, arrived in Tunisia and was integrated into the 33rd FG, flying its first 'milk run' over Pantelleria three days later while the first aerial combat took place on 9 June. The unit moved to El Haouria on 29 June as part of the 324th FG for operations against Sicily prior to Operation Husky, the invasion of that Island planned for 10 July. Lt Charles B. Hall scored the first kill for the 99th a few days later by shooting down a Fw 190 over Sicily. By early 1944 the 'Tuskagee' pilots were flying P-39 Airacobras.

Four all-Negro squadrons had arrived in Italy during summer of 1944, being formed into the 332nd FG on 4 July. The 99th FS was joined by the 100th, 301st and 302nd FS. After a short time flying P-47 Thunderbolts, all squadrons were equipped with P-51 Mustangs – highly distinguished by their red rear appendages which earned them the nickname of 'Redtails'.

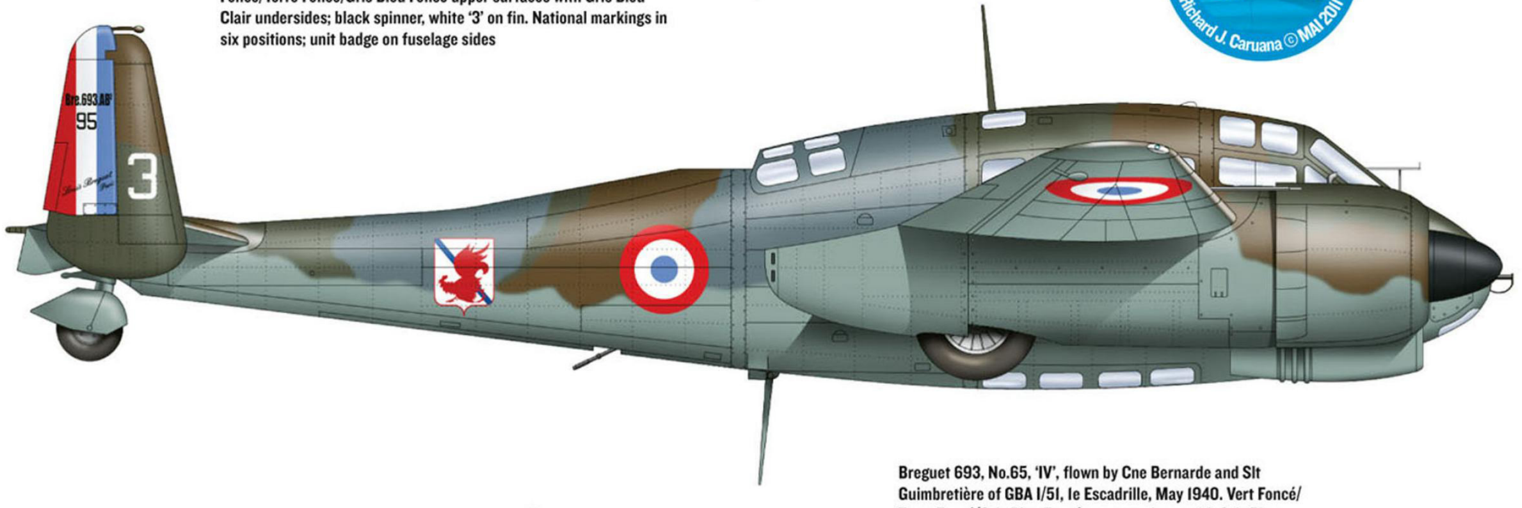
The wartime record of this unit is indeed impressive, having flown over 15,000 combat sorties destroying 111 enemy aircraft in the air and a further 150 on the ground. The highest scoring pilot was Lee A. Archer, with 4 and a half kills (originally 5, as shown on his aircraft, but later his first victory was demoted to 'shared'); 66 pilots were lost in action or in accidents. Redtail pilots earned 150 Distinguished Flying Crosses, 744 Air Medals, 8 Purple Hearts and 14 Bronze Stars. Such an impressive record helped in no small way to bring about the desegregation of the Armed Forces through Executive Order 9981 of 26 July 1948, signed by President Truman.

Far Right: North American P-51D Mustang, '92', 'Boss Lady', flown by Lt Hiram E Mann, 100th FS, 332nd FG, 15th AF, Italy 1945. Natural metal overall with Olive Drab anti-dazzle panel and yellow bands around wings; red nose, wing tips and tail. '92' in black on fuselage sides; black name on nose

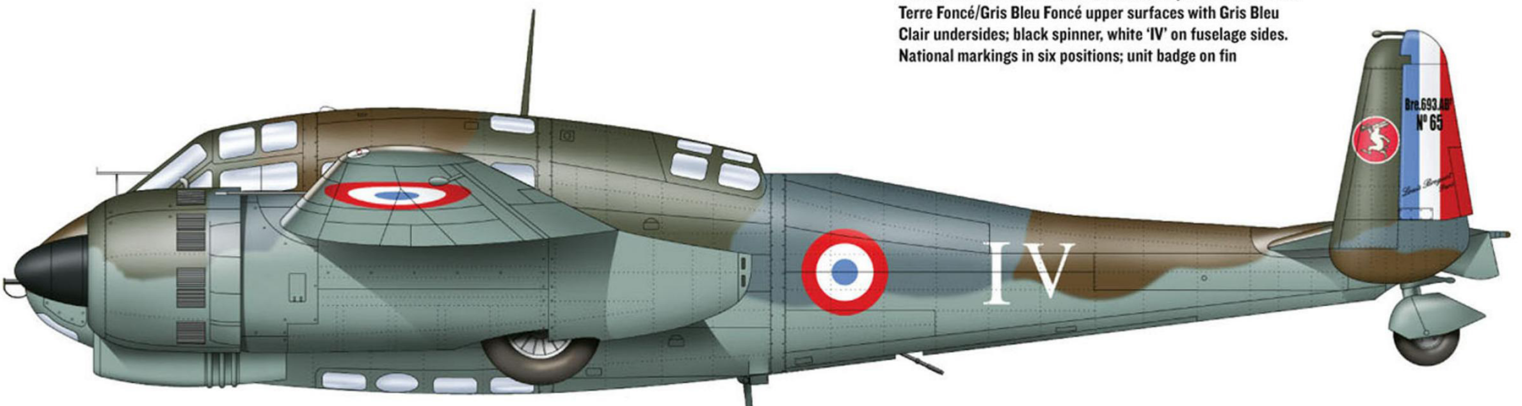


Breguet 693 (SNCAN-built), No.1013, '7', flown by S/C de Thannberg and S/C Badel of GBA II/54, 4e Escadrille, June 1940. Vert Foncé/Terre Foncé/Gris Bleu Foncé upper surfaces with Gris Bleu Clair undersides; black spinner and white '7' on fin. National markings in six positions; unit badge on fuselage sides

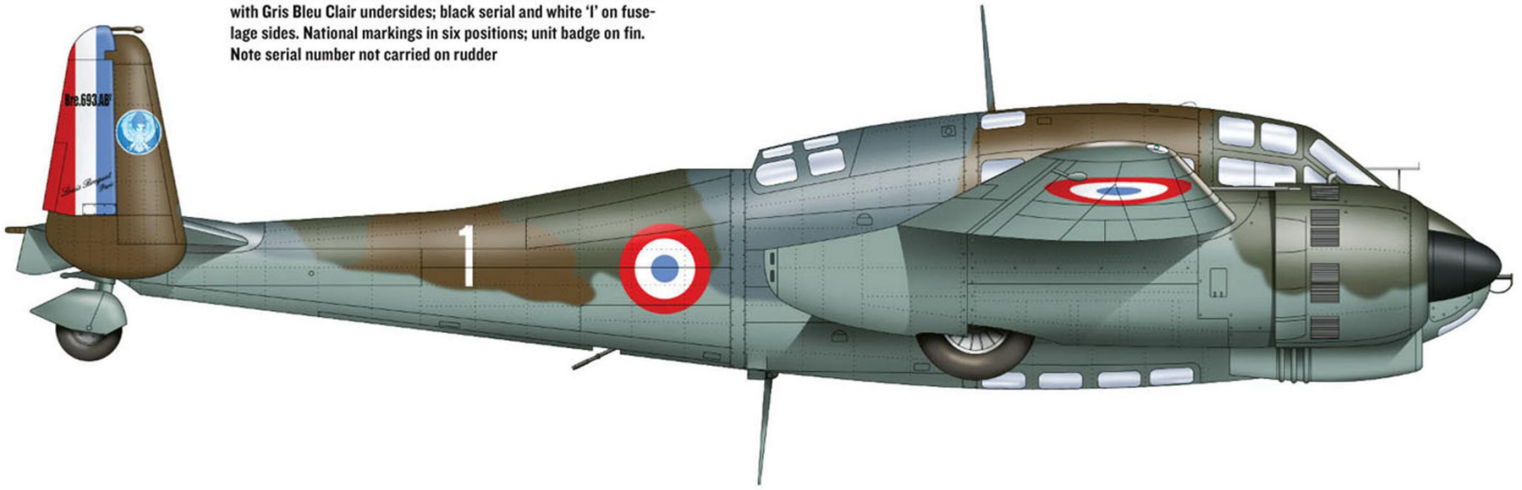
Model AIRPLANE INTERNATIONAL Original Artwork by Richard J. Caruana © MAI 2011



Breguet 693, No.95, '3', GBA I/54, Ie Escadrille, May 1940. Vert Foncé/Terre Foncé/Gris Bleu Foncé upper surfaces with Gris Bleu Clair undersides; black spinner, white '3' on fin. National markings in six positions; unit badge on fuselage sides

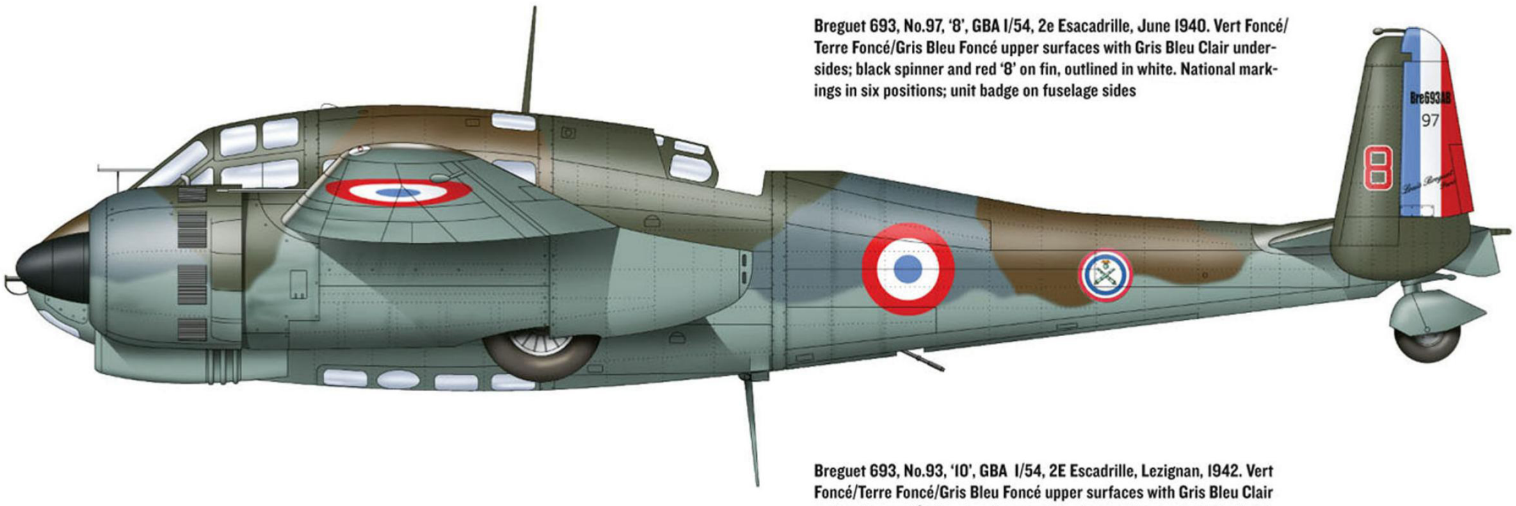


Breguet 693, No.65, 'IV', flown by Cne Bernarde and Slt Guimbretière of GBA I/51, Ie Escadrille, May 1940. Vert Foncé/Terre Foncé/Gris Bleu Foncé upper surfaces with Gris Bleu Clair undersides; black spinner, white 'IV' on fuselage sides. National markings in six positions; unit badge on fin

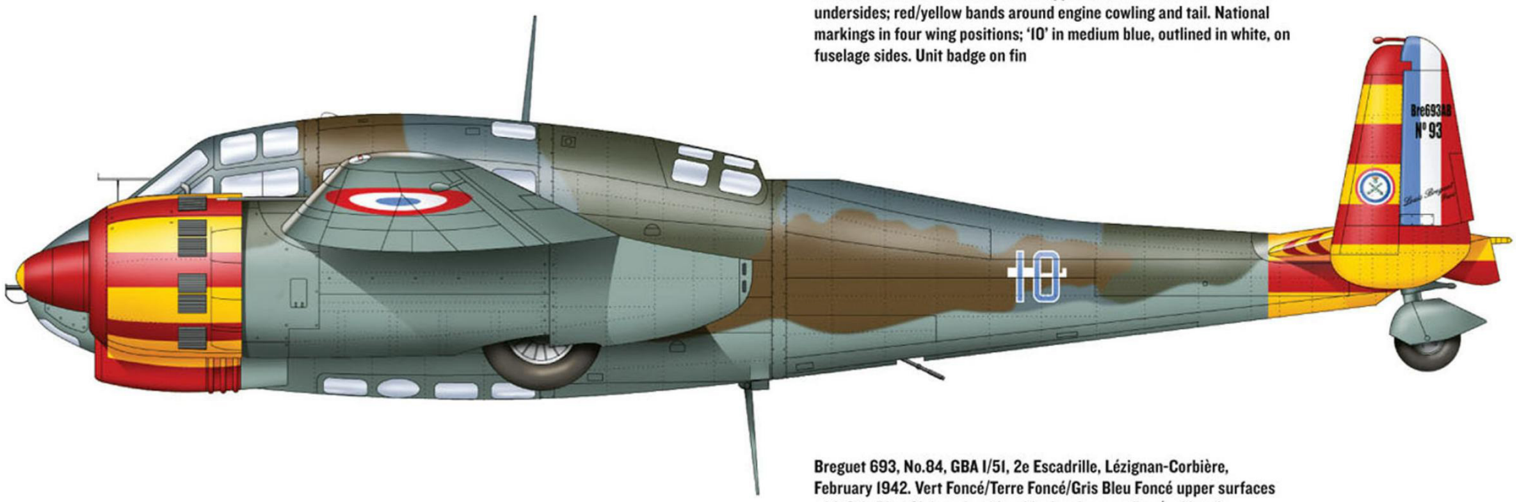


Breguet 693 No.74, 'I', flown by the Commander of GBA I/51, I2 Escadrille. Vert Foncé/Terre Foncé/Gris Bleu Foncé upper surfaces with Gris Bleu Clair undersides; black serial and white 'I' on fuselage sides. National markings in six positions; unit badge on fin. Note serial number not carried on rudder

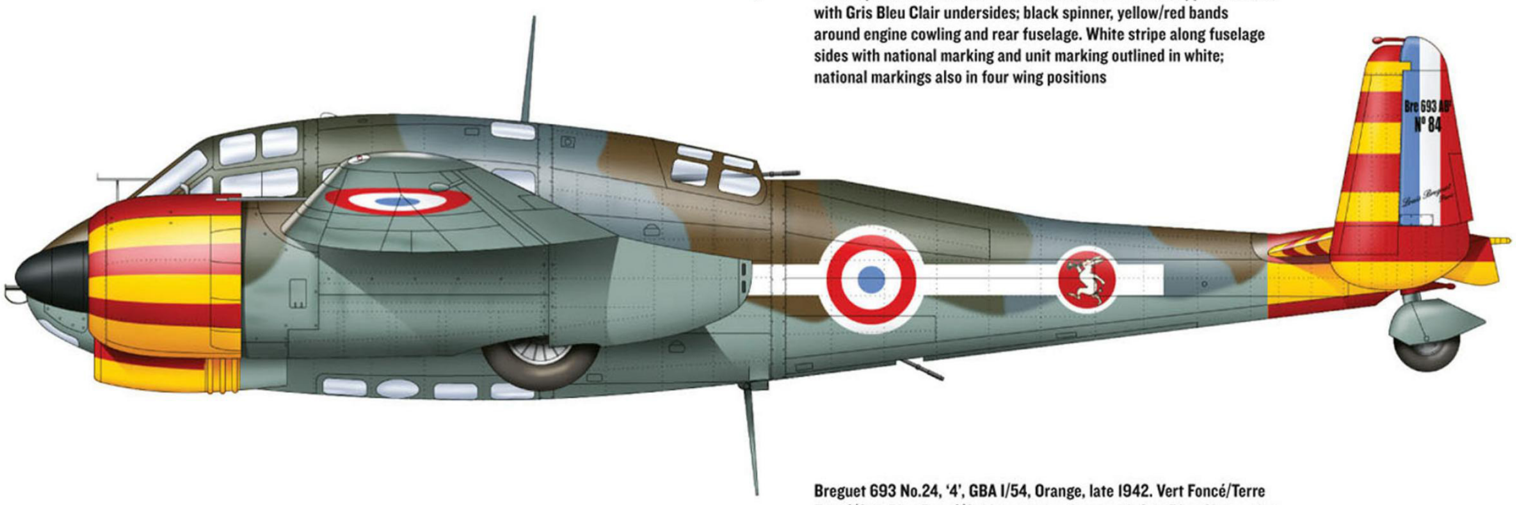
Breguet 693, No.97, '8', GBA I/54, 2e Esacadrille, June 1940. Vert Foncé/Terre Foncé/Gris Bleu Foncé upper surfaces with Gris Bleu Clair undersides; black spinner and red '8' on fin, outlined in white. National markings in six positions; unit badge on fuselage sides



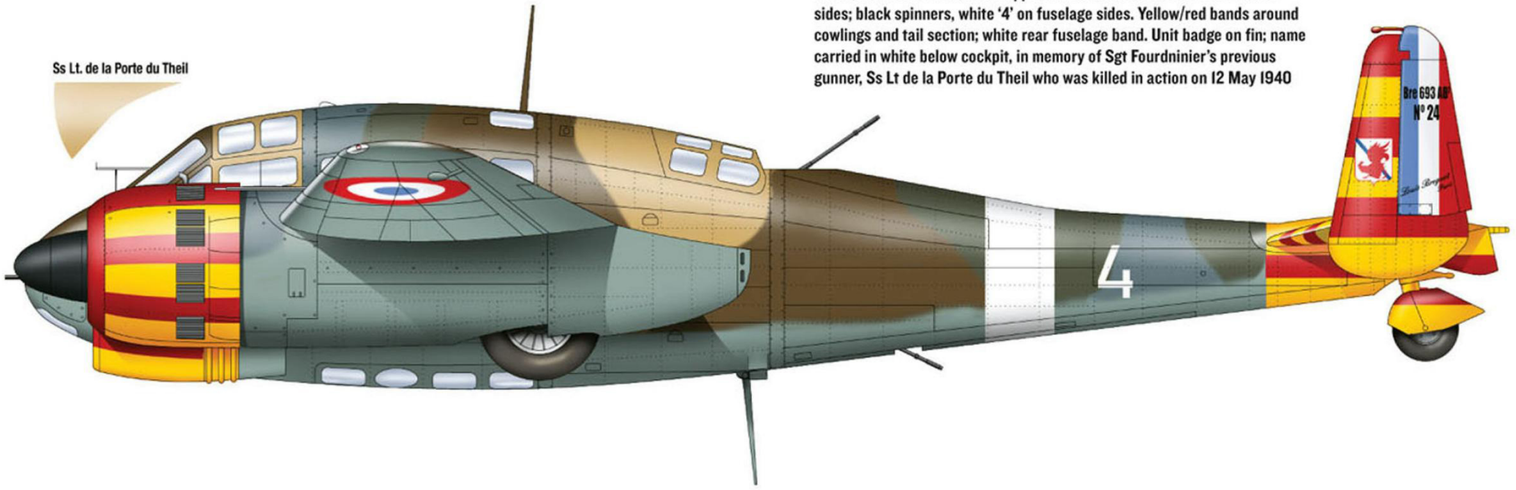
Breguet 693, No.93, '10', GBA I/54, 2E Escadrille, Lezignan, 1942. Vert Foncé/Terre Foncé/Gris Bleu Foncé upper surfaces with Gris Bleu Clair undersides; red/yellow bands around engine cowling and tail. National markings in four wing positions; '10' in medium blue, outlined in white, on fuselage sides. Unit badge on fin



Breguet 693, No.84, GBA I/51, 2e Escadrille, Lézignan-Corbière, February 1942. Vert Foncé/Terre Foncé/Gris Bleu Foncé upper surfaces with Gris Bleu Clair undersides; black spinner, yellow/red bands around engine cowling and rear fuselage. White stripe along fuselage sides with national marking and unit marking outlined in white; national markings also in four wing positions



Breguet 693 No.24, '4', GBA I/54, Orange, late 1942. Vert Foncé/Terre Foncé/Gris Bleu Foncé/Sable upper surfaces with Gris Bleu Clair undersides; black spinners, white '4' on fuselage sides. Yellow/red bands around cowlings and tail section; white rear fuselage band. Unit badge on fin; name carried in white below cockpit, in memory of Sgt Fourdninier's previous gunner, Ss Lt de la Porte du Theil who was killed in action on 12 May 1940



AERMACCHI'S FIRST JET T-BIRD

With more than 700 MB.326s of all versions sold (either direct or through licence manufacture), Aeronautica Macchi has amassed an extensive background of experience in the field of basic-advanced training and light strike aircraft, which progressed to the MB.339 and more recently in the development of the M.346. It was a continuous process of evolution that enabled a classic trainer design to remain abreast of contemporary handling and performance requirements.

Initial design of the *Aeronautica Macchi* (Aermacchi for short) MB.326 trainer and ground attack aircraft started as far back as 1954, when Dr Ing. Ermanno Bazzocchi, Aermacchi's general manager, proposed the Company's development of a basic jet trainer. Dr Bazzocchi's enlightened philosophy in aiming the MB.326 for the highest possible performance, allied to a cockpit equipped to contemporary combat aircraft standards, proved a decisive factor in the sales battles of the 1960s. At a cost of $250,000 ex-works, the basic trainer version was extremely competitive.

Fully aware of the competition, the Italian team set out to combine in a highly refined yet essentially simple aircraft: the best features of the French Fouga Magister, equipped with cockpit pressurisation but no ejection seats and which suffered structural limitations and the British Jet Provost, which was equipped with ejection seats but was unpressurised and was penalised by its aerodynamic configuration. The result constituted a considerable advance in structural aircraft design as the MB.326 encompassed the wide range of characteristics required for ab-initio through advanced training.

The extremely broad performance spectrum was allied to a robust, simple and conventional airframe with fail-safe and safe-life design criteria throughout and stressed for flight load factor of +8g and -4g; a simple, sturdy single-spool turbojet known for its acceptance of mishandling; roomy air-conditioned and pressurised cockpits fitted with automatic ejection seats, and emphasis on high utilisation with minimal servicing and maintenance.

Designated MB.326, the new design established aesthetic standards for training aircraft that remained valid for a long period of time. A development contract for a static test specimen and two flying prototypes was awarded, and the first MB.326 (I-MAKI), powered by a Viper 8 engine, performed its maiden flight on 10 December 1957 with *Comandante* Guido Carestiato, Aermacchi's chief test pilot, at the controls. The second prototype, which joined the flight test programme during 1958, was powered by a Viper 11 of 2,500lb/st, the Viper variant selected by the Aeronautica Militare Italiana (AMI) to power the trainers ordered.

The MB.326 made its public debut in June 1959, when the second prototype was demonstrated at the Paris Salon by Comandante Carestiato with an impressive public display showing off the manoeuvrability of the little Italian jet. However, the MB.326 aroused only modest interest among the numerous observers present; only the Australians decided to try out the aircraft and in July Air Comodore D.W. Kingswell and Sqn Ldr I. Hawes made several proving flights at the manufacturer's Venegono airfield. Both Australian pilots with very greatly impressed.

During 1960-61 several MB.326s were evaluated by the *Reparto Sperimentale di Volo* (RSV – Experimental Test Establishment) under the direction of *Colonello* Colagiovanni. The flight test period confirmed that the aircraft was fully suitable for the AMI's requirements providing the ideal solution to the problems long debated during ATAF meetings. In particular the extreme ease of handling guaranteed that flying schools would turn out pilots with the capabilities sought by the AMI.

A pre-production batch of 15 MB.326s was ordered for the AMI, and the first of these flew on 5 October 1960. By February 1962 a further 35 were ordered and the first course on this type began on 22 March 1962 with the 214º *Gruppo* of the *Scuola di Volo Basico Iniziale Aviogetti* (SVBIA – Basic Jet Flying School) at Lecce-Galatina, some 30 miles south of Brindisi, taking over the task previously performed by T-6 Texans. Thus Italy followed France, Britain and West Germany in using jet aircraft for ab-initio pilot training.

By that time the first group of 20 students had completed their course, the instructors had found the new aircraft an ideal platform for instructional work. Particularly appealing was its high safety factor, while stalling characteristics were gentle, touchdown speed modest and trim changes negligible when wheels and flaps were extended. Performance was extremely lively with stick forces light and response crisp throughout. Particularly impressive was its manoeuvrability at altitude which surpassed that of most contemporary fighters. The success of the new trainer resulted in a further 50 examples being ordered for the AMI for the conversion of the remaining two elements of the Lecce school, the 212º and 213º *Gruppi*.

In February 1963 the Alitalia Flying School started all-through jet training for commercial pilots, using four MB.326s equipped with airline-type electronic and navigation equipment. Designated MB.326Ds, the four aircraft were soon achieving a very high utilisation of what was basically a military design, averaging around 100 flying hours a month over two years and on several occasions individual machines flying over 200 hours in one month. Serviceability was of a very high order right from the start. Three of the aircraft were later acquired by the AMI following Alitalia's decision to send cadets to the SVBIA for training. Two MB.326Ds were eventually converted into drones.

Further procurement of MB.326s by the AMI was limited to the two prototypes of the MB.326G (of which more later) and a few examples of the MB.326E. Although the more powerful, combat-capable MB.326G did not find favour with the AMI, in 1973 the service decided to supplement its existing MB.326 fleet with a better equipped model embodying some of the features of the MB.326G. Designated MB.326E, the new variant retained the lowered powered Viper 11 for fleet commonality, but was fitted with a similar wing to that of the MB.326GB, incorporating six stores hardpoints, a fixed weapons sight and gun camera and new avionics including miniaturised TACAN and UHF. Six new-build MB.326Es were delivered to the AMI, and six of the existing MB.326s were rebuilt to 'E' standard.

By 1 October 1981, the official introduction date of the replacement MB.339, the MB.326 had flown some 400,000 hours with the SVBIA. Other miscellaneous units used the MB.326s, including the *Squadriglie Collegamenti* (Liaison Flights), where it replaced the T-33A. The total number of MB.326s of all marks procured by the AMI was 128 (not including those acquired from Alitalia).

EXPORT SUCCESS

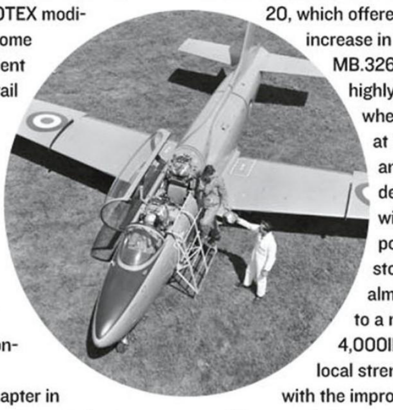
As delivered to the AMI, the MB.326 was a pure pilot trainer with no provision for armament. Aermacchi had proposed an armed version, the MB.326A, for the weapons training role, but the Italian service had no requirement for such an aircraft. Conscious of the potential inherent in the basic design, the manufacturer looked at the export market with the MB.326B, a dual-role model combining the training mission with close support. Six wing hardpoints were introduced, capable of lifting a wide variety of military stores carried by NATO tactical fighters of the day. Trials proved the MB.326 to be a very stable weapons platform and this, coupled with an extremely competitive price, soon attracted international acceptance.

The Tunisian Government ordered eight MB.326s becoming the first jet equipment for its fledgling air arm, and deliveries commenced in mid-1965. Ghana followed suit with an order for seven aircraft and deliveries also commenced in 1965. Two more aircraft were acquired later to make up for attrition. The Ghanian aircraft were designated MB.326Fs and were similar to the Tunisian MB.326Bs except for avionics. With a reputation now established as a high -performance aircraft with almost vice less flying qualities and a simple and robust airframe, the MB.326 proved attractive to the governments of Australia and South Africa, with both countries negotiating and finalising manufacturing licences for the type during the course of 1965.

The Australian version, designated MB.326H, differed from that supplied to the AMI in having added avionics, including TACAN, UHF, ADF, etc, and provision for a complete armament fit. The initial contract placed on behalf of the RAAF was for 75 aircraft, of which the first 12 came from Aermacchi's assembly line and the remaining 63 were to be built by Commonwealth Aircraft with Hawker de Havilland as major sub-contractor. Imported components and assemblies were used to build the first 18 of the licence-built aircraft. The RAAF initially employed the MB.326H purely for the basic phase of its training syllabus, retaining the CA.27 Sabre for the advance phase. However, in 1970, after three years of service, the RAAF decided to use the MB.326H for the entire basic and

advanced phases. A further 12 MB.326Hs were added to the original RAAF contract (bringing the total to 87) and a batch of 10 was ordered for the Royal Australian Navy.

In 1977 Commonwealth Aircraft completed a feasibility study concerning the updating of the RAAF's MB.326 fleet. At that time, the total cost was estimated at just over Aust $25 million, or 10-12 per cent of the cost of a completely new jet trainer programme. As a result of this study, the Australian government shelved plans for early procurement of an MB.326 replacement, and by the mid-1980s the RAAF's fleet was cycled through the LOTEX (Life-of-Type-Extension) which extended the type's service life for a further ten years. About a dozen MB.326s were processed at any one time, the LOTEX modifications requiring some 15 weeks. Replacement wing, fuselage and tail components where necessary were produced on the original jigs and tools used in the licence-manufacturing programme, and improvements were introduced to the cockpit and avionics systems.



An interesting chapter in the RAAF's MB.326 story was the re-establishment of No.76 Squadron – a Mirage unit disbanded in August 1973 – as a day fighter unit equipped with the MB.326H, operating from Williamtown AFB. This move followed a decision taken in 1988 that a pilot's 'wings' were to be awarded on the Pilatus PC-9 when sufficient aircraft of that type became available for advanced training. The MB.326H would then be withdrawn from the advanced syllabus, and No.76 Squadron could provide an introductory course for prospective F-111 navigators, F/A-18 and F-111 pilots and a day fighter continuation training course. Other RAAF units to fly the MB.326 were Nos.25, 77, 79 Squadrons, No.2 Flying Training School, No.2 Operational Conversion Unit, No.5 Operational Training Unit, The Central Flying School and, of course, The Roulettes Aerobatic Team.

The South African Air Force (SAAF) initially required the MB.326 for the basic phase of its flying training syllabus, but also desired employing the more aggressive capabilities of the aircraft for weapons training and associated tasks. The South African model was designated MB.326M by the parent company and given the name Impala by the SAAF. An initial batch of 40 were supplied by Aermacchi, these lacking provision for armament and being assigned primarily for flying training. Using a prototype MB.326M retained in Italy, Aermacchi developed an armed version for operational use with various armament configurations. This version was subsequently built by Atlas Aircraft Corporation in South Africa. Initially Italian manufactured parts were used, but these were progressively supplanted by locally-made components. Total of MB.326Ms operated by the SAAF was 151, among which were those flown by the Silver Falcons Aerobatic Team.

MORE POWERFUL VERSIONS

The parent company had rolled out its 100th MB.326 in December 1965, and up to then all aircraft had been powered by the Viper 11 200 Series engine, as were to be all production aircraft for a further two years. However, well before the 100th machine had left the assembly line, Aermacchi in concert with Bristol Siddeley had proposed an uprated version of the aircraft powered by the Viper 20, which offered a 36 per cent increase in thrust. The MB.326 had proven highly manoeuvrable when carrying stores at high speeds, and it had been determined that with the increased power external stores could be almost doubled to a maximum of 4,000lb. With some local strengthening to cope with the improved performance and increased all-up weight, the MB.326 proved to be highly attractive as a light strike aircraft.

Thus, a second phase in the development of the MB.326 was launched and work began on the new dual-role version, one with more emphasis on combat potential. The new model was designated MB.326G, and was intended to combine the light attack mission with basic-advanced flying training and weapons training. Powered by the Viper 20 Mk 540 engine of 3,360lb/st (like the Viper 11, it was also-Piaggio-built), the export model became the MB.326GB and the first customer was the Argentine Navy which, late in 1968, ordered a batch of six, later supplemented by a further two ordered in 1972. The service also procured twelve MB.326 Xavantes (Embraer-built MB.326GCs) from Brazil in the early 1980s. Serviceability, following the Falklands War and Britain's embargo on the supply of spares suffered immensely. The government of Zaire also chose the MB.326GB, ordering a total of 17. Neighbouring Zambia followed with an initial batch of six MB.326GBs in 1969, followed by a second batch of six in 1972 and a final batch of six in 1973.

The biggest customer for the uprated MB.326 was to be the Brazilian Air Force (FAB) which, following an agreement signed in May 1970 between Aermacchi and Embraer for the licence assembly of the aircraft, placed an initial order for 112 MB.326GCs, which earned the service name Xavante. The first Embraer-assembled Xavante flew on 3 September 1971, with the 100th aircraft being completed on 6 September 1976, by which time a further 40 had been ordered by the FAB. Total production totalled 182 which included six MB.326GGs exported to Togo.

ENTER THE SINGLE-SEATER

The availability of the 4,000lb/st Viper 600 Series encouraged Aermacchi to develop the MB.326 design a stage further, a single-seat light attack and operational training aircraft. Fatigue requirements imposed by the ground attack role necessitated strengthening certain areas; servo-boosted ailerons were introduced and two electrically-operated DEFA 553 cannon were installed in the lower fuselage walls, the elimination of the second cockpit providing space for their 125-round ammunition tanks which, located on rails, could slide in and out, as well as for additional fuel and avionics transferred from the nose.

The single-seat version was initially known as the MB-336, and a two-seat version with the Viper 600 Series engine was simultaneously investigated by Aermacchi. However due to the fact that the basic configuration remained unchanged, coupled with the excellent international reputation enjoyed by the MB.326, the new single- and two-seat models became the MB.326K and MB.326L respectively. The decision to proceed with the MB.326K was taken in June 1969, and the prototype, powered by a Viper 540, made its first flight from Venegono on 22 August 1970 piloted by Comanctante Carestiato. The second prototype joined the programme the following year, and flew from the outset with the definitive Viper 632-43, demonstrating excellent performance and outstanding low-level manoeuvrability.

In 1974 Dubai placed an order for three single-seat MB.326KDs and a two-seat MB.326LD for its para-military Police Air Wing. The aircraft were to form Dubai's initial contribution to the Air Force of the United Arab Emirates. These were later augmented by an additional two MB.326KDs and one MB.326LD.

Late in 1972 the Chairman of the South Africa Armaments Board, Prof. H.J. Samuels, announced that an "advanced subsonic aircraft" would soon be assembled in South Africa for the SAAF, and that the first model would come off the assembly line late in 1973 or early 1974. He was referring to the MB.326K, which had impressed the Pretoria government with its potential for the close support and counter-insurgency roles. An order was placed with Aermacchi and agreement reached for a follow-on manufacturing licence for this variant. Manufacture of the two-seat MB.326M by Atlas Aircraft was phased out during 1975 and the parent company delivered seven MB.326KCs beginning in late 1974,followed by 15 in knocked-down form for assembly by Atlas. Known as Impala IIs, these aircraft were delivered with the lower powered Viper 540 pending the availability of the more powerful Viper 632-43 with which they were eventually re-engined. The type served with Nos.4, 5, 8 and 40 Squadrons of the SAAF.

Atlas received further orders in 1976 when Tunisia ordered eight MB.326KT single-seaters and four MB.326LT two-seaters to replace its ageing F-86F Sabres. These aircraft joined eight MB.326B trainers that had been acquired in 1965. Also in 1976, Ghana placed a contract with Aermacchi for six MB.326KB single-seaters for use primarily in the light attack role, becoming the first combat aircraft to be taken into the Ghana Air Force inventory. Last but not least, the Force Arienne Zairoise placed an order for eight MB.326Ks in 1978 to supplement the 17 MB.326GBs previously delivered.

Production by the parent company ended in 1978, giving way to the equally-successful MB.339. As if to assert its position in the training aircraft manufacturing field for many years to come, Aermacchi (now Alenia-Aermacchi) has been developing the M.346 Master with firm orders already placed by the AMI while great interest has been displayed by United Arab Emirates and Sinapore.

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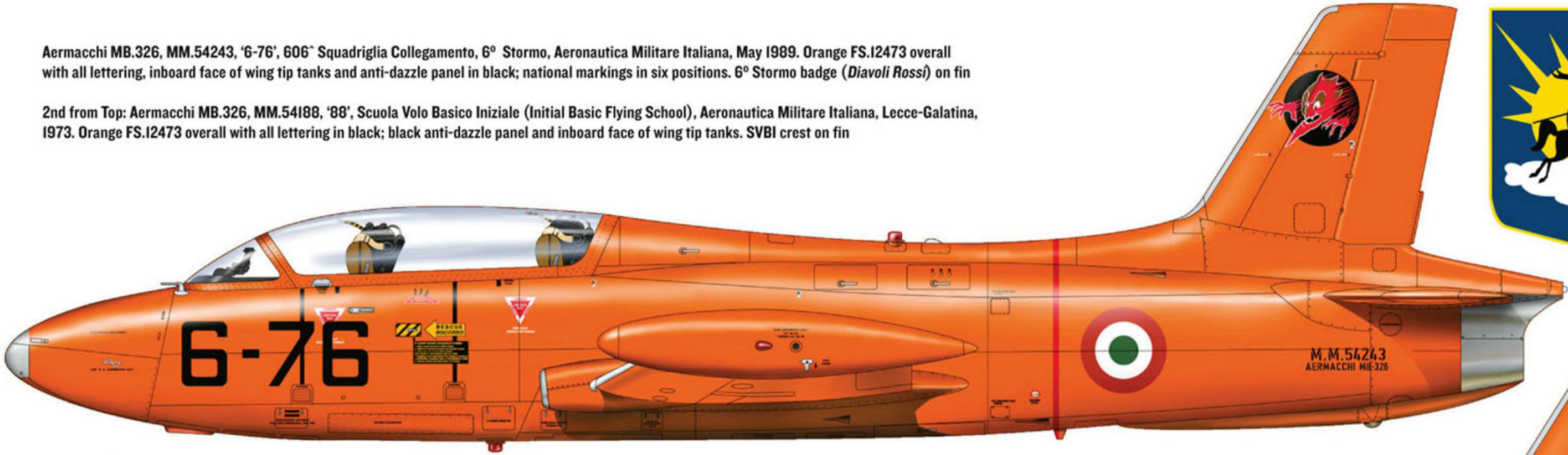
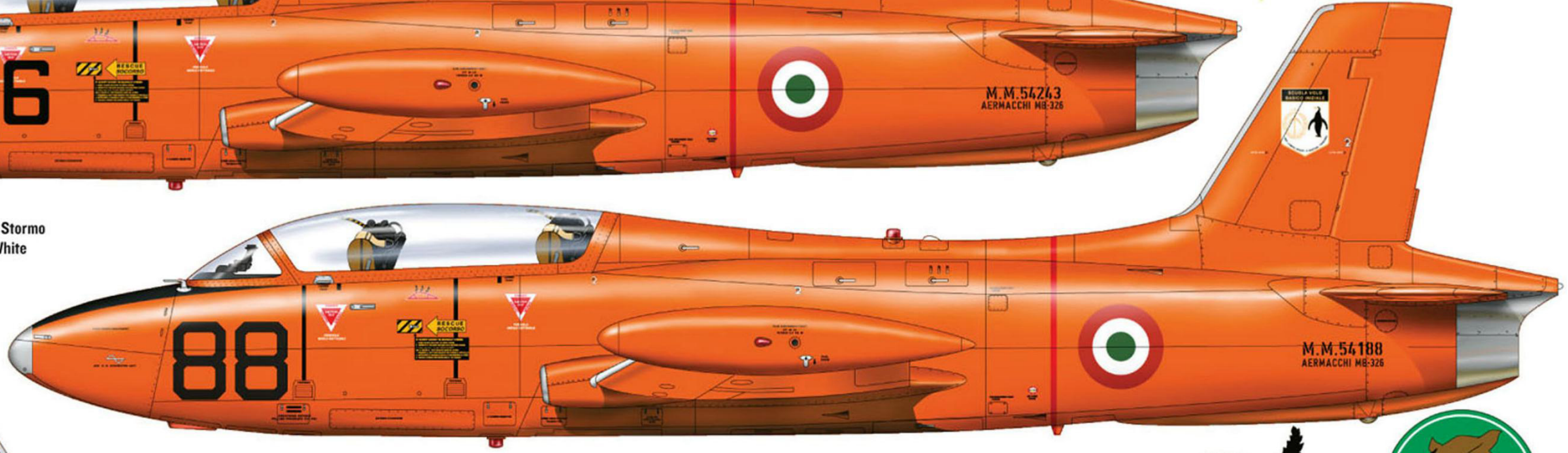
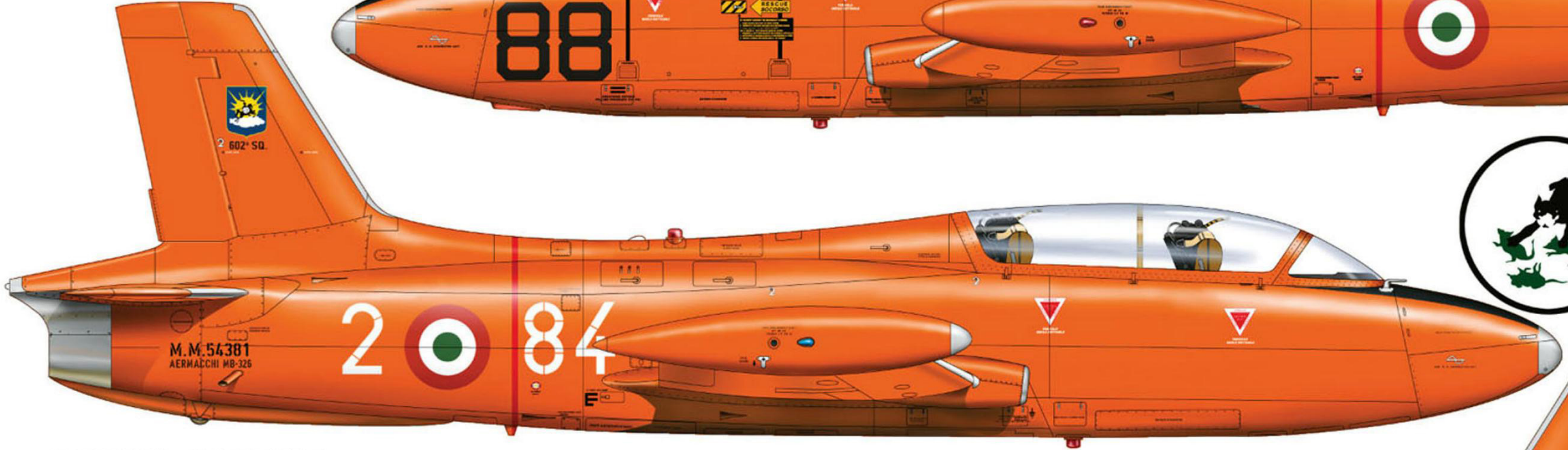
Aermacchi MB.326, MM.54243, '6-76', 606^ Squadriglia Collegamento, 6º Stormo, Aeronautica Militare Italiana, May 1989. Orange FS.12473 overall with all lettering, inboard face of wing tip tanks and anti-dazzle panel in black; national markings in six positions. 6º Stormo badge (*Diavoli Rossi*) on fin

2nd from Top: Aermacchi MB.326, MM.54188, '88', Scuola Volo Basico Iniziale (Initial Basic Flying School), Aeronautica Militare Italiana, Lecce-Galatina, 1973. Orange FS.12473 overall with all lettering in black; black anti-dazzle panel and inboard face of wing tip tanks. SVBI crest on fin



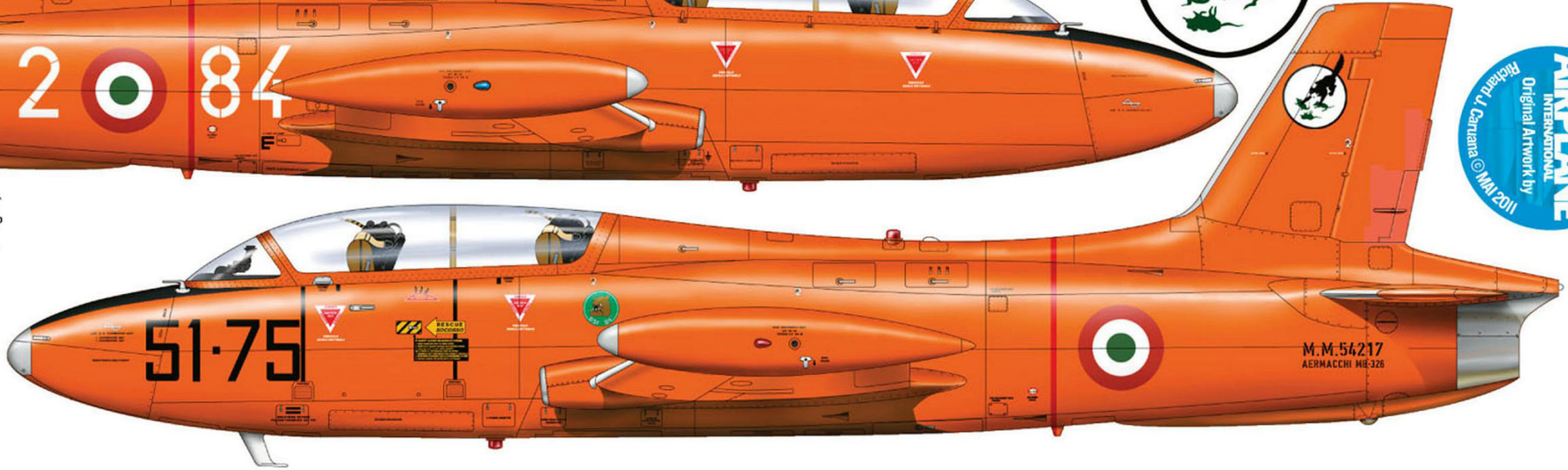
Aermacchi MB.326, MM.54381, '2-84', 602^ Squadriglia Collegamento, assigned to the 2º Stormo Caccia, Aeronautica Militare Italiana, 1989. White codes; 2º Stormo crest on fin



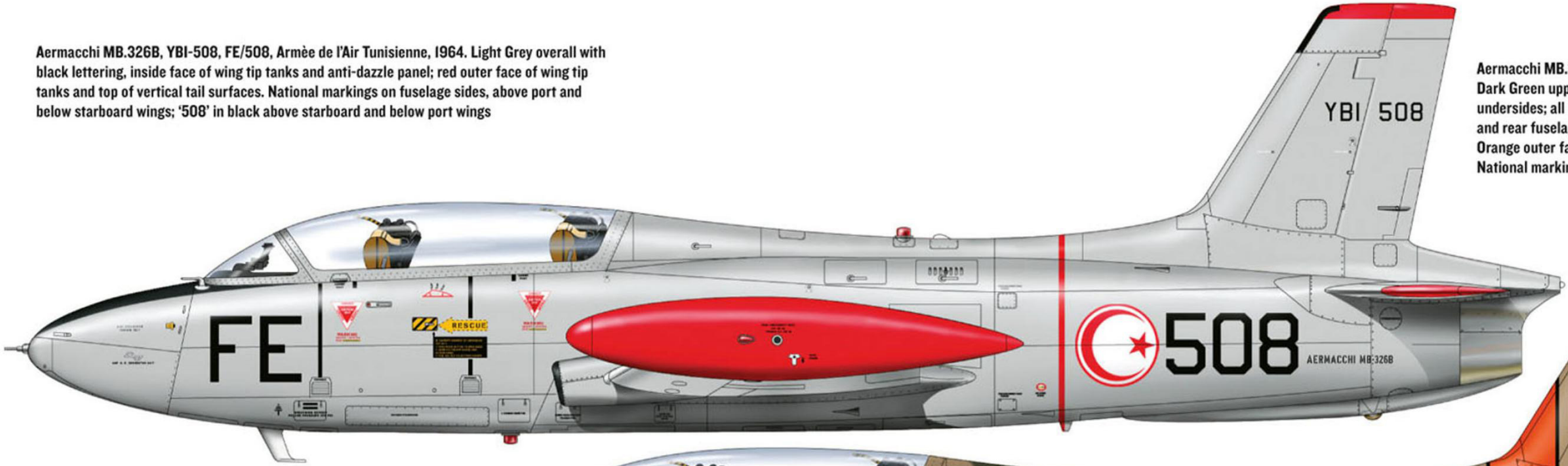


Original Artwork by Richard J. Caruana © MAI 2011

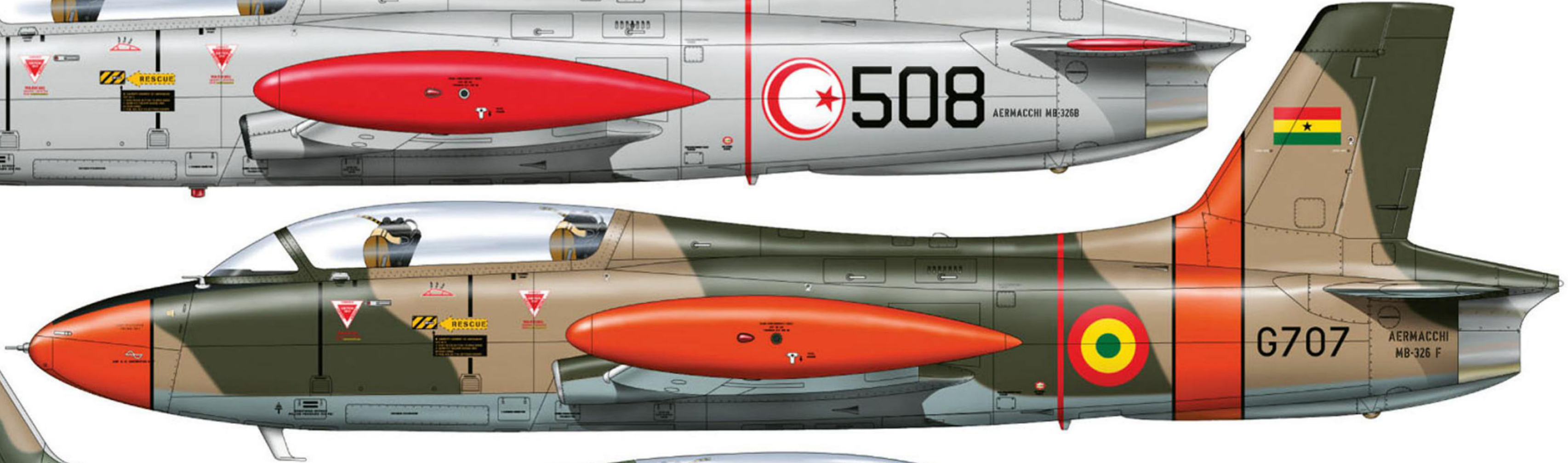
Aermacchi MB. 326E, MM.54217, '51-75', 651^ Squadriglia Collegamento, assigned to the 51º Stormo Caccia, Aeronautica Militare Italiana, Istrana. Orange FS.12473 overall with all lettering in black; black anti-dazzle panel and inboard face of wing tip tanks. National markings in six positions; 51º Stormo badge on fin, 651^ Squadriglia badge on fuselage sides. Note addition of trim tab to rudder on this versionr

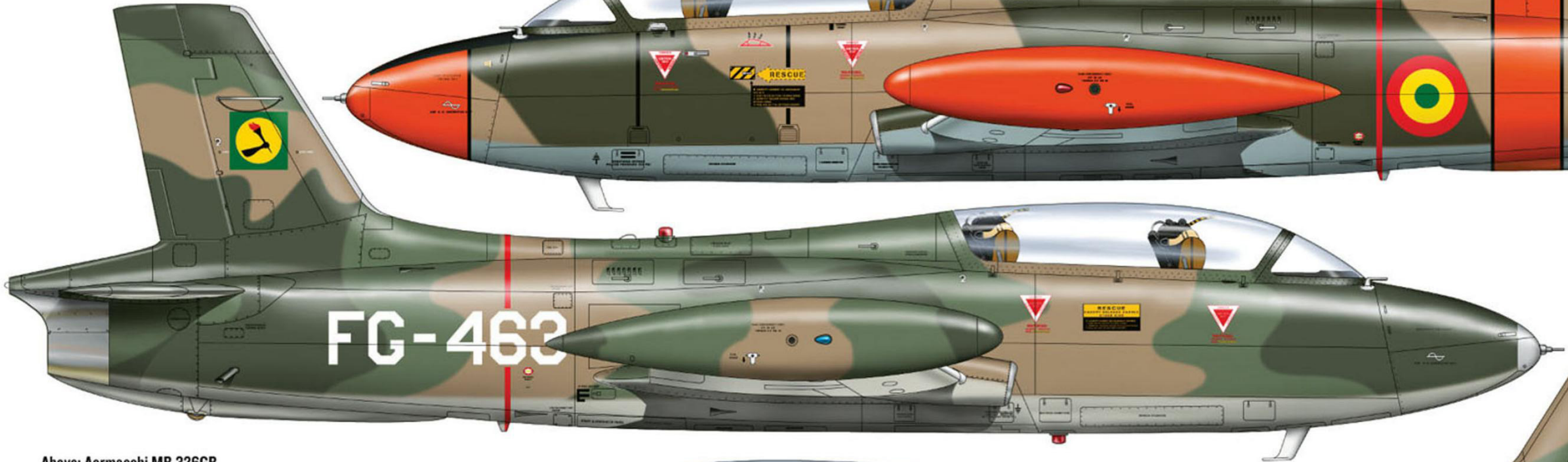


Aermacchi MB.326B, YBI-508, FE/508, Armèe de l'Air Tunisienne, 1964. Light Grey overall with black lettering, inside face of wing tip tanks and anti-dazzle panel; red outer face of wing tip tanks and top of vertical tail surfaces. National markings on fuselage sides, above port and below starboard wings; '508' in black above starboard and below port wings

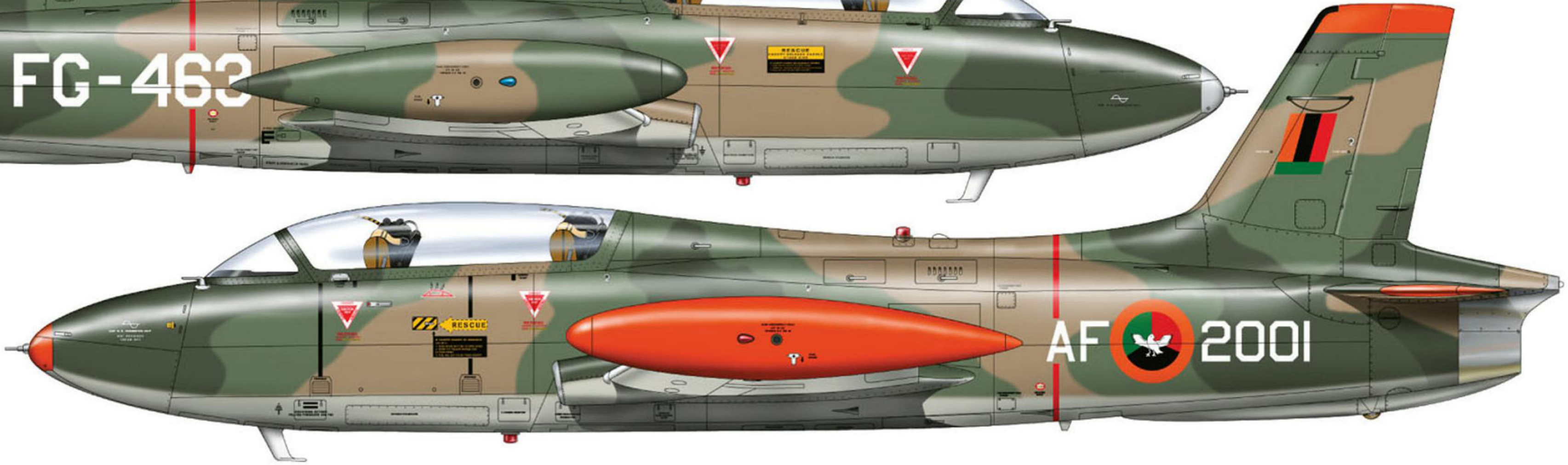


Aermacchi MB.326F, G707, Ghana Air Force. Dark Sand and Dark Green upper surfaces with Light Blue Grey FS.36473 undersides; all lettering in black. International Orange nose and rear fuselage band, outlined in black; International Orange outer faces of wing tip tanks, inner faces in black. National markings in six positions





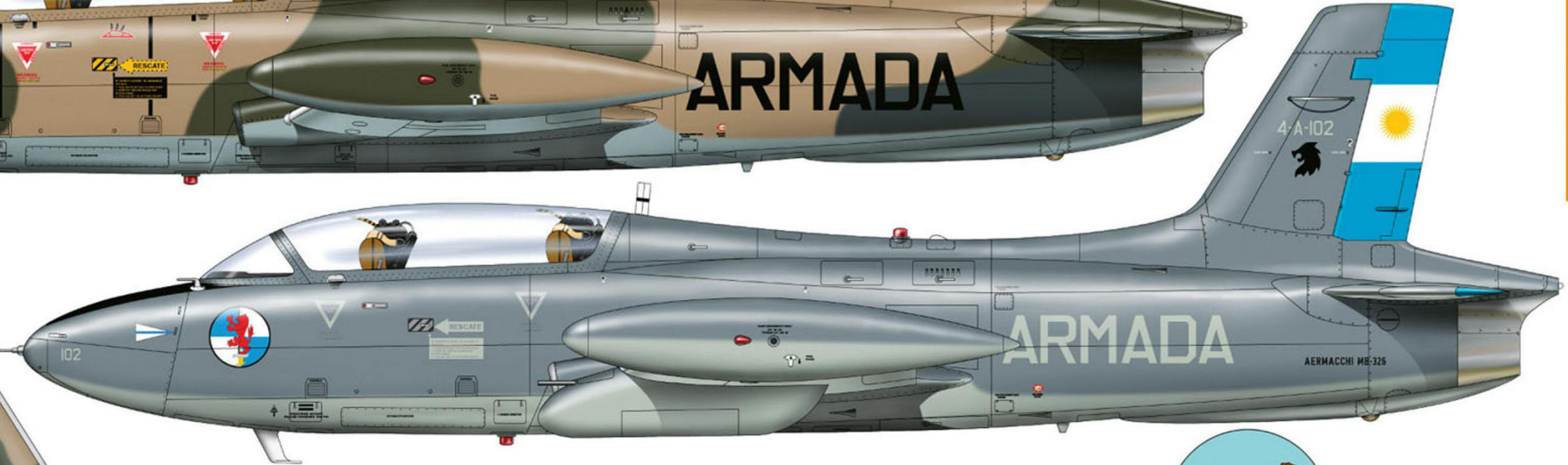
Above: Aermacchi MB.326GB, FG-463, Force Aèrienne Zairoise. Tan FS.30219/Green FS.34012/Dark Green FS.34079 upper surfaces with Light Grey FS.36622 undersides; codes in white

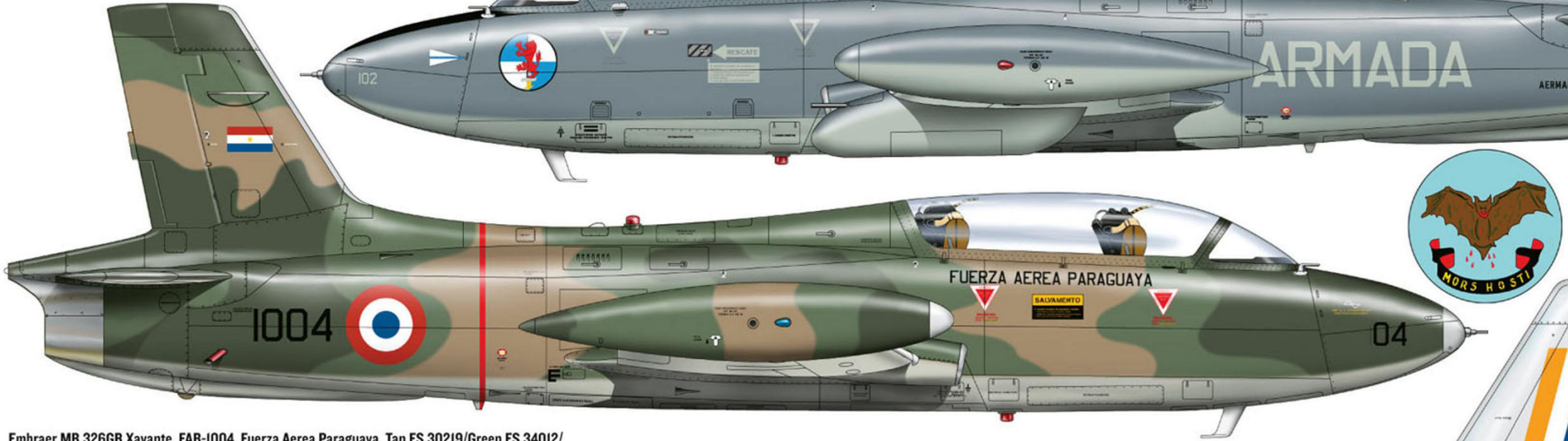


Right: Aermacchi MB.326GB. AF-2011, Zambian Air Force. Same scheme as above; International Orange nose, outer face of wing tip tanks and tips of verirtal and horizontal tail surfaces; black inboard face of wing tip tanks. Codes in white

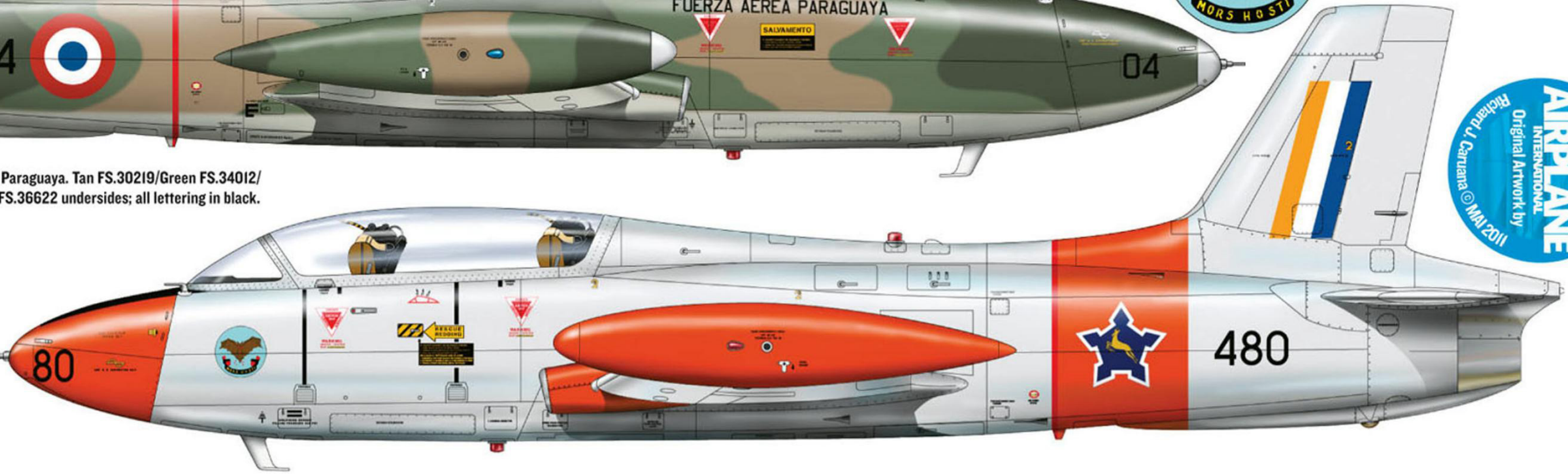
Aermacchi MB.326GB Pelicano, A-4-105, '105', I° Escuadrilla de Ataque, Aviacion Naval Argentina. Dark Sand and Dark Green upper surfaces with Light Blue Grey FS.36473 undersides; all lettering in black. Black anchor markings in four wing positions

Embraer EMB.326GB, 4-A-102, I° Escuadrilla de Ataque, Aviacion Naval Argentina. Grey FS.38231 upper surfaces with Light Grey FS.38492 undersides; blue/white/blue rudder and elevators, with the Argentinian 'Sun' superimposed on the former. Markings are 'reversed', i.e. darker grey on light grey areas and vice versa; unit badge and rank pennant on nose. Black anti-dazzle panel and 'lion's head' on fin





Embraer MB.326GB Xavante, FAB-1004, Fuerza Aerea Paraguaya. Tan FS.30219/Green FS.34012/ Dark Green FS.34079 upper surfaces with Light Grey FS.36622 undersides; all lettering in black. National markings in six positions



Atlas MB.326 Impala Mk I, 480/80, No.4 Squadron South African Air Force, Waterkloof AFB, 1974. Aluminium overall with Dayglo Orange nose, outer face of wing tip tanks, air intakes and rear fuselage band; all lettering in black. National markings in six positions; '480' repeated below wings, inboard of national markings. Unit badge on nose

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Below: Atlas Impala Mk I, '602', No.7 Squadron South African Air Force, Malan Airport (Cape Town), 1984. Dark Sand and Dark Green upper surfaces with Light Blue Grey FS.36473 undersides; all lettering in black. National markings in six positions; unit badge on nose

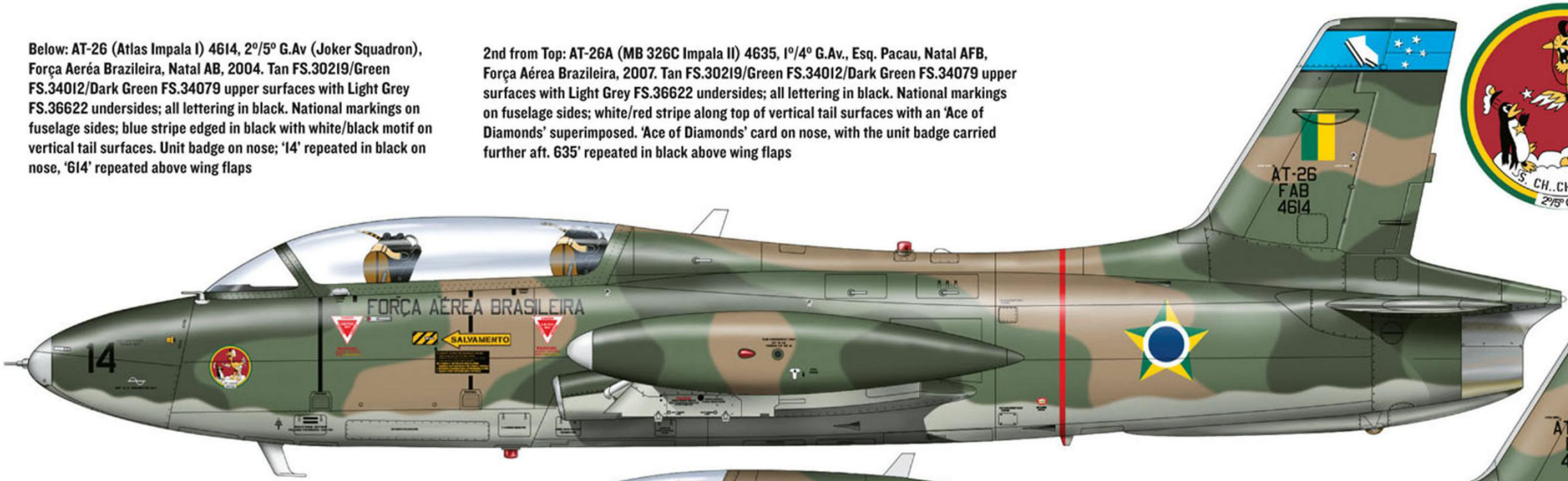
3rd from Top: Aermacchi CA-30, A7-050/50, No.79 Squadron Royal Australian Air Force, Perce AFB, 1998. Dark Sea Grey overall with black anti-dazzle panel, wing and fin leading edges; yellow trim to nose, vertical tail surfaces, wings and tailplane. Black Skull marking on fin; codes in white on fuselage sides and on top of fin. National markings in six positions

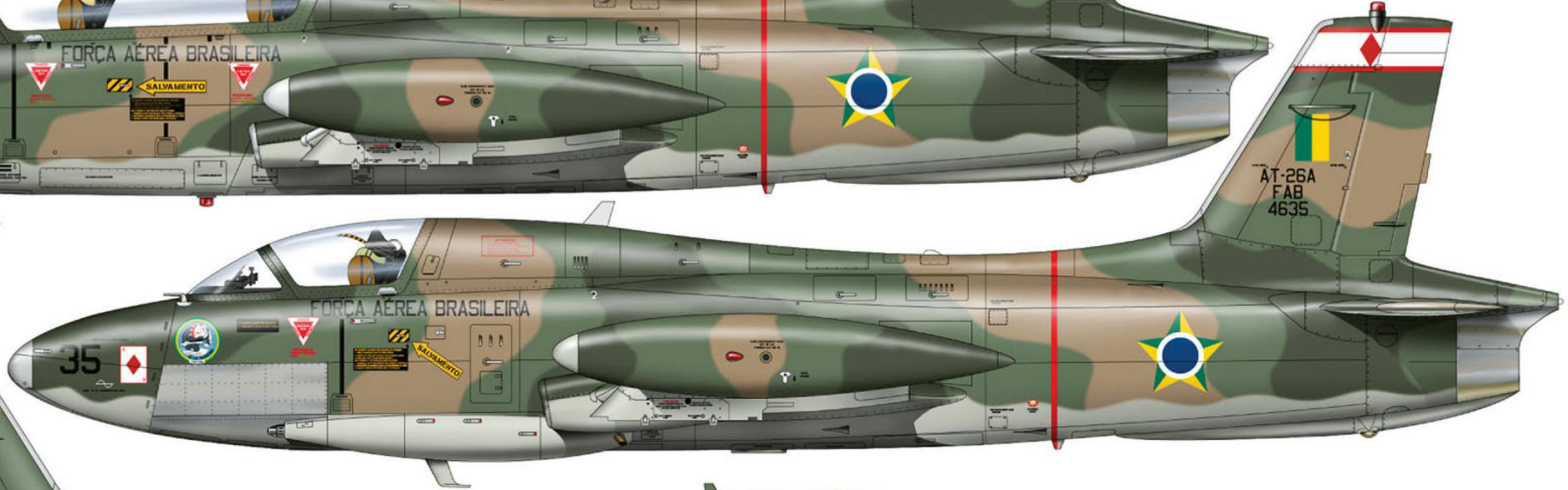
Bottom of Page: Aermacchi CA.30, A7-057, No.76 Squadron Royal Australian Air Force, Williamtown, mid-1998. Dark Sea Grey and Dark Green upper surfaces with Light Grey undersides; black anti-dazzle panel and front of wing tip tanks. Serial on fuselage sides and code on top of fin in white. National markings in six position; unit badge, with the addition of No.25 Squadron's 'duck' added as a zap on the fin within a white circle over a red and black vertical tail surfaces. Nose zap consists of two F/A-18 Hornet 'kills' on nose

Below: Aermacchi CA-30 (MB.326H), A7-079/79, Royal Australian Air Force Aerobatic Team 'Roulettes'. BS.381C/557 Light Orange/White general finish with undersides in Aluminium; black anti-dazzle panel, lettering and inboard face of wing tip tanks. Australian flag on fuselage sides; national markings in six positions. 'R' on fin is red

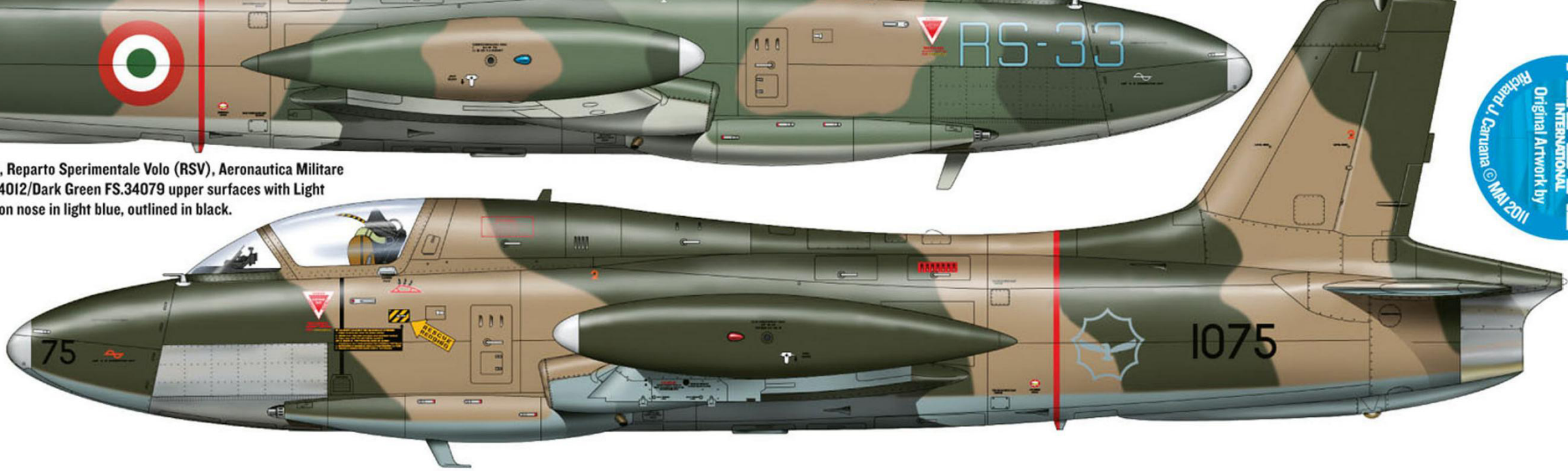
Below: AT-26 (Atlas Impala I) 4614, 2º/5º G.Av (Joker Squadron), Força Aeréa Brazileira, Natal AB, 2004. Tan FS.30219/Green FS.34012/Dark Green FS.34079 upper surfaces with Light Grey FS.36622 undersides; all lettering in black. National markings on fuselage sides; blue stripe edged in black with white/black motif on vertical tail surfaces. Unit badge on nose; '14' repeated in black on nose, '614' repeated above wing flaps

2nd from Top: AT-26A (MB 326C Impala II) 4635, 1º/4º G.Av., Esq. Pacau, Natal AFB, Força Aérea Brazileira, 2007. Tan FS.30219/Green FS.34012/Dark Green FS.34079 upper surfaces with Light Grey FS.36622 undersides; all lettering in black. National markings on fuselage sides; white/red stripe along top of vertical tail surfaces with an 'Ace of Diamonds' superimposed. 'Ace of Diamonds' card on nose, with the unit badge carried further aft. 635' repeated in black above wing flaps





Above: Aermacchi MB.326K, MM.54390, 'RS-33', Reparto Sperimentale Volo (RSV), Aeronautica Militare Italianas, March 1990. Tan FS.30219/Green FS.34012/Dark Green FS.34079 upper surfaces with Light Grey FS.36622 undersides; Serial in black, code on nose in light blue, outlined in black. National markings in six positions



Right: Atlas Impala Mk II, 1075, 85 Combat Flight School, South African Air Force, Hoedspruit AFB, 2005. Dark Sand and Dark Green upper surfaces with Light Blue Grey FS.36473 undersides; all lettering in black. Low viz national markings in light grey.

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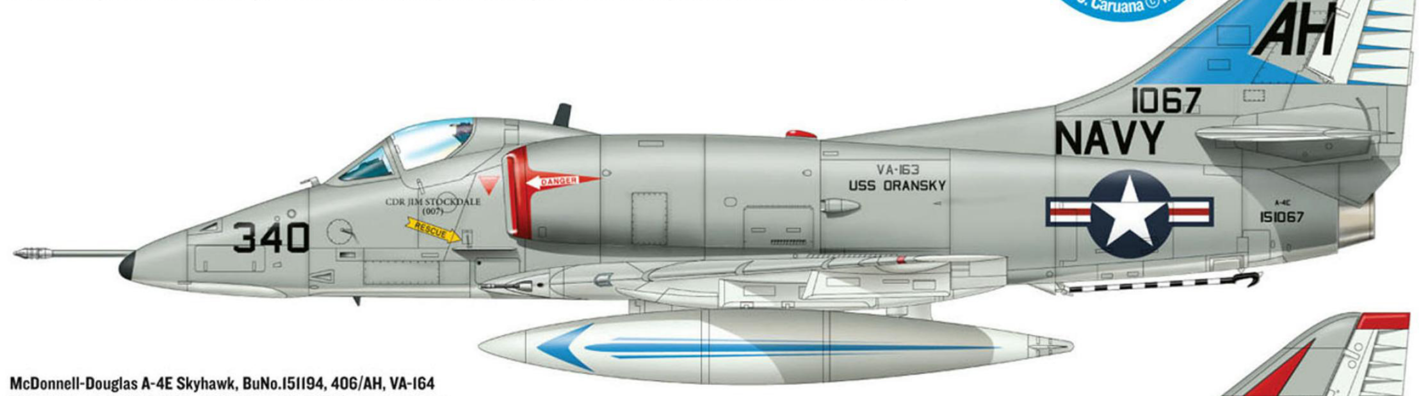
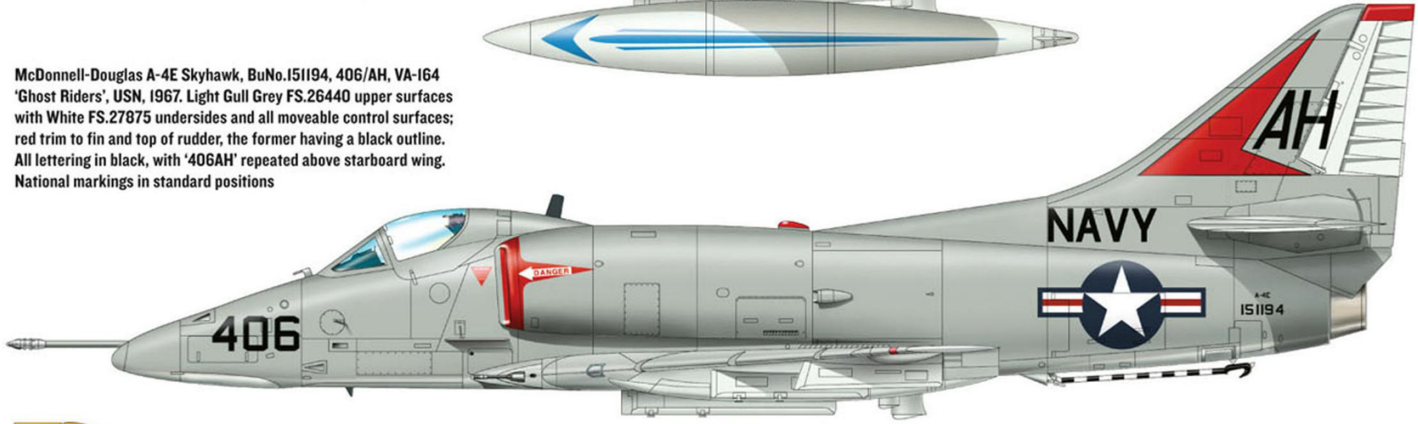
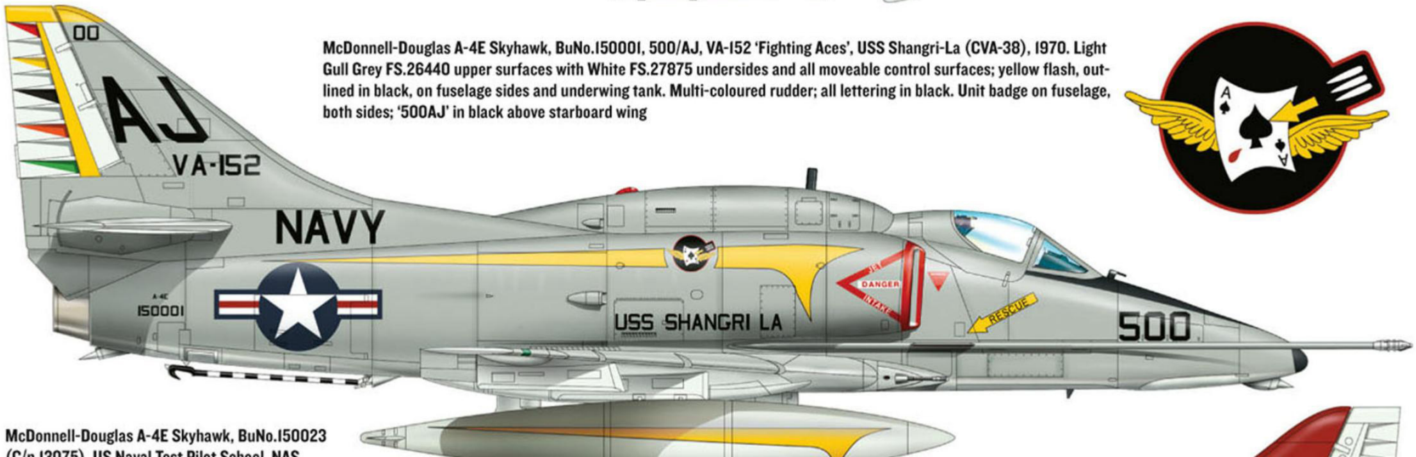
McDonnell-Douglas A-4E Skyhawk, BuNo.151067, 340/AH, flown by Cdr Jim Stockdale of VA-163 'Saints', USS Oransky, 1965. Light Gull Grey FS.26440 upper surfaces with White FS.27875 undersides and all moveable control surfaces; Medium Blue trim to fin, rudder and underwing tanks. All lettering in black, except for '40' in white on top of rudder; national markings in standard positions. '340AH' repeated in black above starboard wing



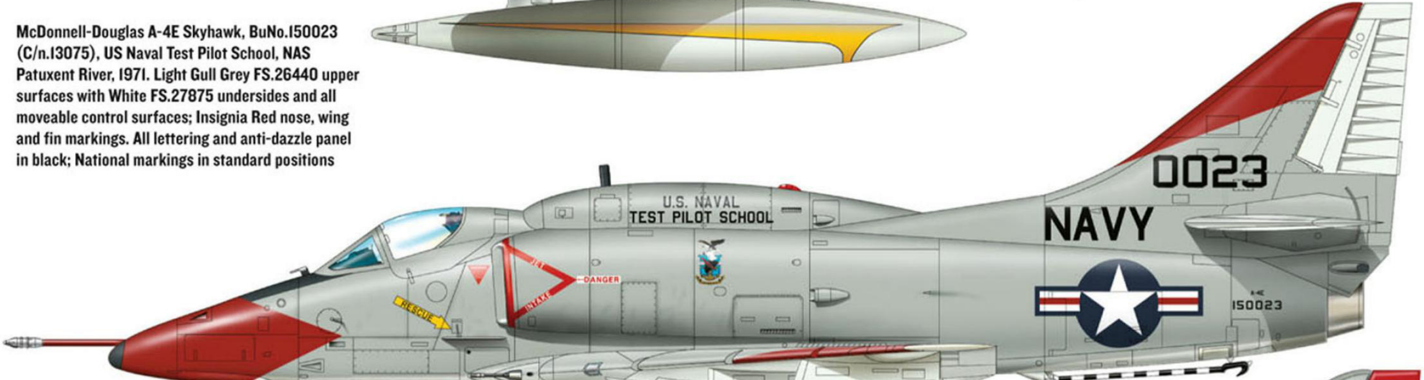
McDonnell-Douglas A-4E Skyhawk, BuNo.151194, 406/AH, VA-164 'Ghost Riders', USN, 1967. Light Gull Grey FS.26440 upper surfaces with White FS.27875 undersides and all moveable control surfaces; red trim to fin and top of rudder, the former having a black outline. All lettering in black, with '406AH' repeated above starboard wing. National markings in standard positions



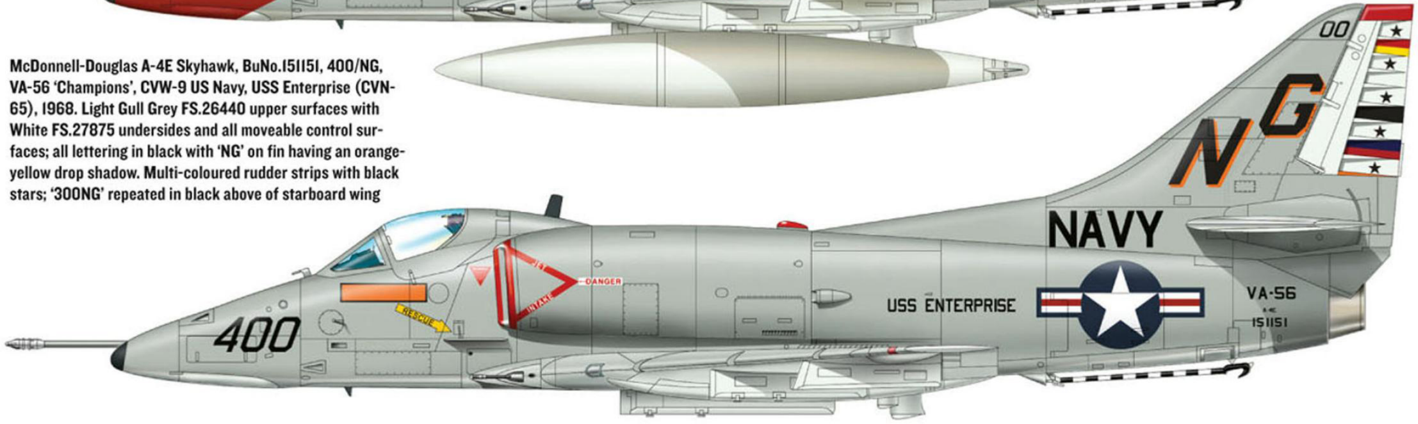
McDonnell-Douglas A-4E Skyhawk, BuNo.150001, 500/AJ, VA-152 'Fighting Aces', USS Shangri-La (CVA-38), 1970. Light Gull Grey FS.26440 upper surfaces with White FS.27875 undersides and all moveable control surfaces; yellow flash, outlined in black, on fuselage sides and underwing tank. Multi-coloured rudder; all lettering in black. Unit badge on fuselage, both sides; '500AJ' in black above starboard wing



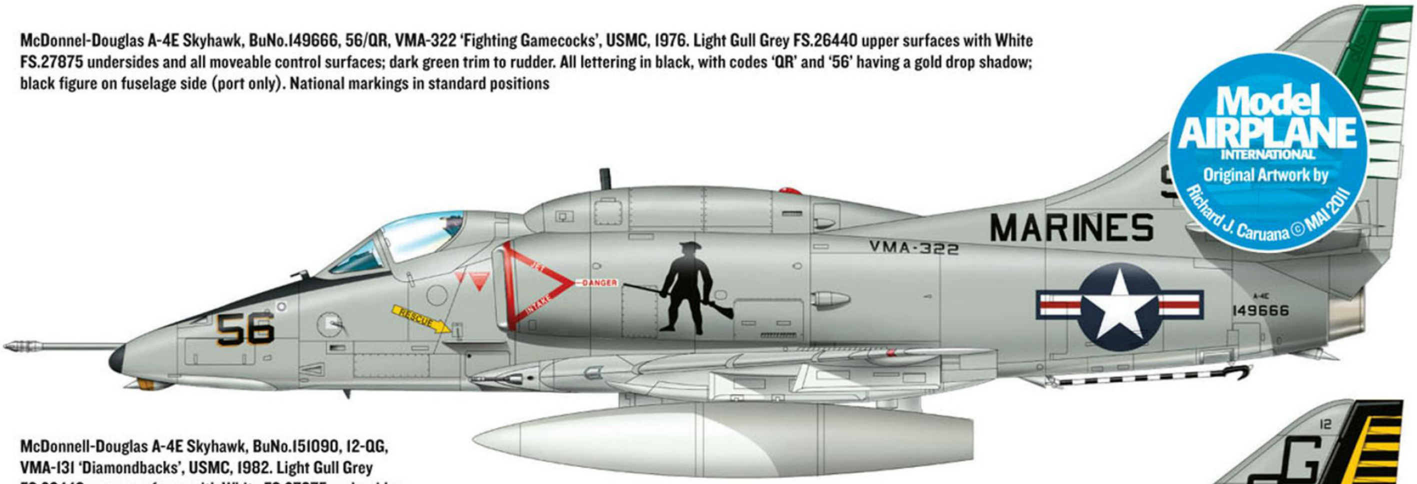
McDonnell-Douglas A-4E Skyhawk, BuNo.150023 (C/n.13075), US Naval Test Pilot School, NAS Patuxent River, 1971. Light Gull Grey FS.26440 upper surfaces with White FS.27875 undersides and all moveable control surfaces; Insignia Red nose, wing and fin markings. All lettering and anti-dazzle panel in black; National markings in standard positions



McDonnell-Douglas A-4E Skyhawk, BuNo.151151, 400/NG, VA-56 'Champions', CVW-9 US Navy, USS Enterprise (CVN-65), 1968. Light Gull Grey FS.26440 upper surfaces with White FS.27875 undersides and all moveable control surfaces; all lettering in black with 'NG' on fin having an orange-yellow drop shadow. Multi-coloured rudder strips with black stars; '300NG' repeated in black above of starboard wing



McDonnel-Douglas A-4E Skyhawk, BuNo.149666, 56/QR, VMA-322 'Fighting Gamecocks', USMC, 1976. Light Gull Grey FS.26440 upper surfaces with White FS.27875 undersides and all moveable control surfaces; dark green trim to rudder. All lettering in black, with codes 'QR' and '56' having a gold drop shadow; black figure on fuselage side (port only). National markings in standard positions



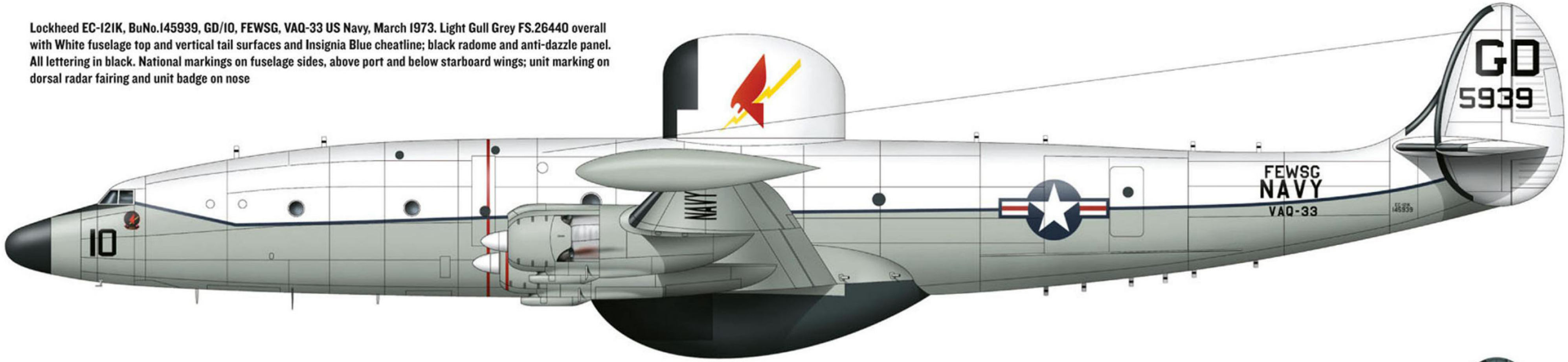
McDonnell-Douglas A-4E Skyhawk, BuNo.151090, 12-QG, VMA-131 'Diamondbacks', USMC, 1982. Light Gull Grey FS.26440 upper surfaces with White FS.27875 undersides and all moveable control surfaces; all lettering in black. Black band with yellow diamonds on fuselage sides; black/yellow rudder. National markings in standard positions

McDonnell-Douglas A-4E, BuNo.151059, VA-126, USN Fighter Weapons School (Top Gun). Tan FS.33531 and Dark Tan FS.30219 upper surfaces with Light Grey FS.36495 undersides; all lettering and markings in two tone grey. Serial on rear fuselage in Tan FS.33531; red star, outlined in white, on fin with Top Gun badge superimposed in its centre

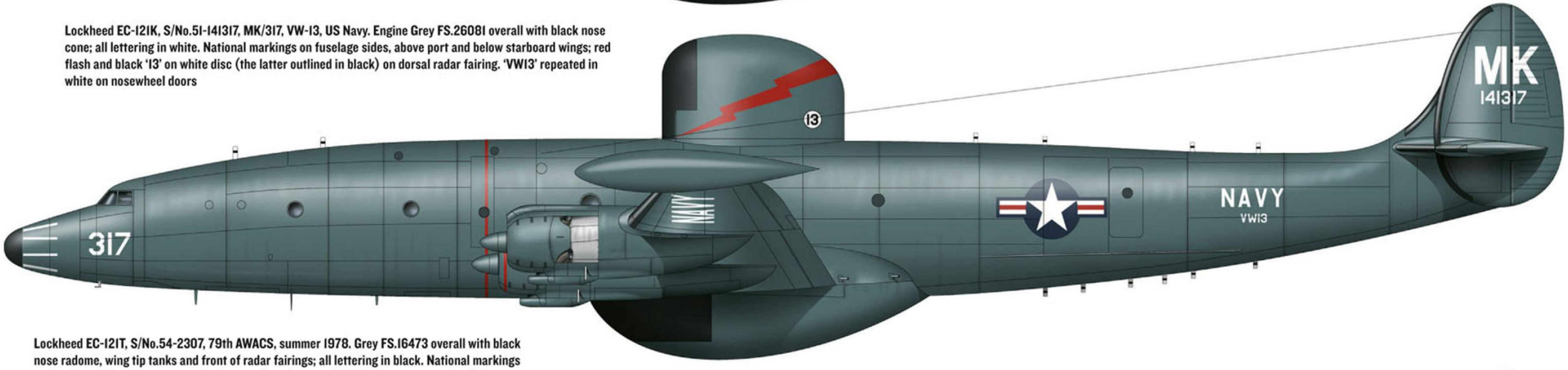
McDonnell-Douglas A-4E Skyhawk, No.253, 'Knights of the North' Squadron, Israeli Air Force, 1972. Tan FS.33531, Green FS.34227 and Brown FS.30219 upper surfaces with Light Blue FS.35622 undersides; codes and area around gun muzzles in black. Unit badgee on fin (both sides); national markings in six positions

McDonnell-Douglas A-4E Skyhawk, No.215, 'Flying Wing' Squadron, Israeli Air Force. Tan FS.33531, Green FS.34227 and Brown FS.30219 upper surfaces with Light Blue FS.35622 undersides; codes and area around gun muzzles in black. Unit badge on fin (both sides); national markings in six positions

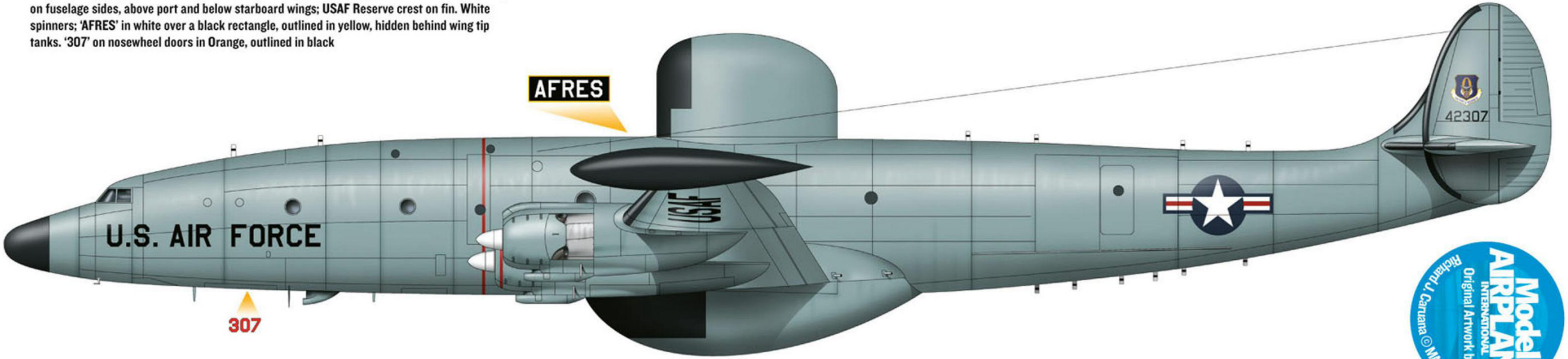
Lockheed EC-121K, BuNo.145939, GD/10, FEWSG, VAQ-33 US Navy, March 1973. Light Gull Grey FS.26440 overall with White fuselage top and vertical tail surfaces and Insignia Blue cheatline; black radome and anti-dazzle panel. All lettering in black. National markings on fuselage sides, above port and below starboard wings; unit marking on dorsal radar fairing and unit badge on nose



Lockheed EC-121K, S/No.51-141317, MK/317, VW-13, US Navy. Engine Grey FS.26081 overall with black nose cone; all lettering in white. National markings on fuselage sides, above port and below starboard wings; red flash and black '13' on white disc (the latter outlined in black) on dorsal radar fairing. 'VW13' repeated in white on nosewheel doors



Lockheed EC-121T, S/No.54-2307, 79th AWACS, summer 1978. Grey FS.16473 overall with black nose radome, wing tip tanks and front of radar fairings; all lettering in black. National markings on fuselage sides, above port and below starboard wings; USAF Reserve crest on fin. White spinners; 'AFRES' in white over a black rectangle, outlined in yellow, hidden behind wing tip tanks. '307' on nosewheel doors in Orange, outlined in black



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NORTH AMERICAN (FIAT) F-86K Sabre Jet

F-86K SABRE PRODUCTION:

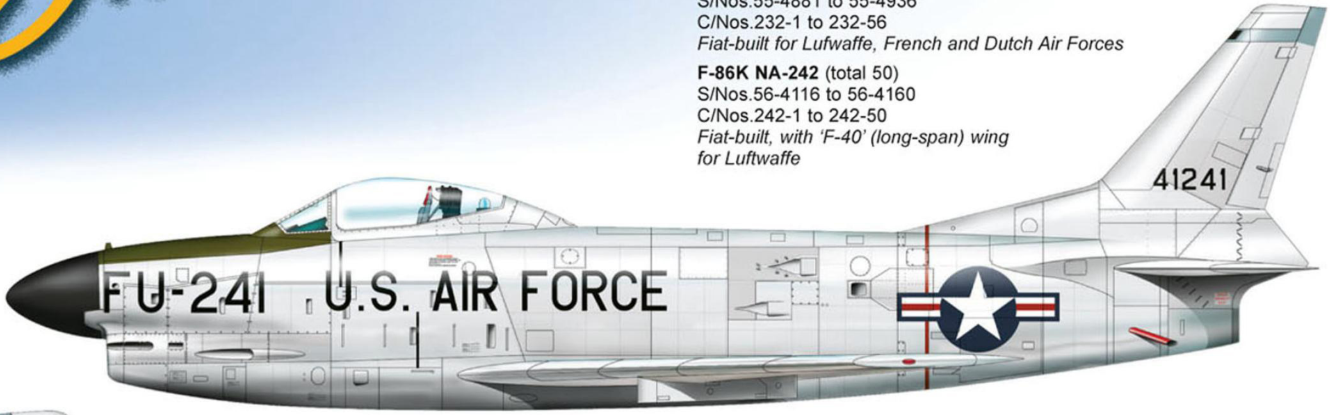
F-86K NA-207 (total 50)
S/Nos.53-8273 to 53-8322
C/Nos.207-1 to 207-50
Fiat-built aircraft, production-standard with 4x M39 20mm cannon for Italian Air Force

F-86K NA-213 (total 120)
S/Nos.54-1231 to 54-1350
C/Nos.213-1 to 213-120
Inglewood-built for Norwegian and Dutch Air Forces

F-86K NA-221 (total 70)
S/Nos.55-4811 to 55-4880
C/Nos.221-1 to 221-70
Fiat-built for Italian and French Air Forces

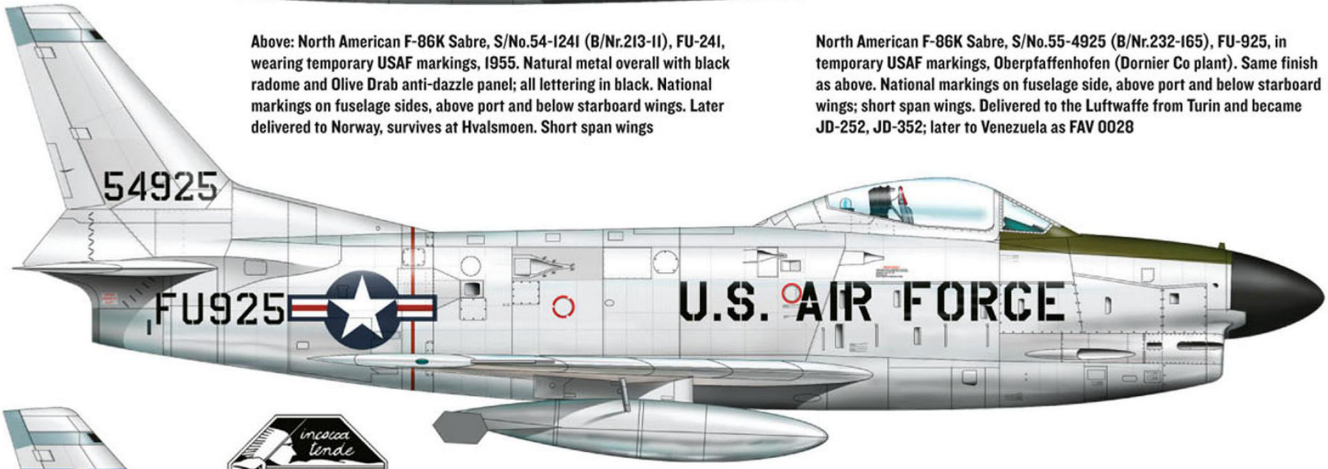
F-86K NA-232 (total 56)
S/Nos.55-4881 to 55-4936
C/Nos.232-1 to 232-56
Fiat-built for Lufwaffe, French and Dutch Air Forces

F-86K NA-242 (total 50)
S/Nos.56-4116 to 56-4160
C/Nos.242-1 to 242-50
Fiat-built, with 'F-40' (long-span) wing for Luftwaffe

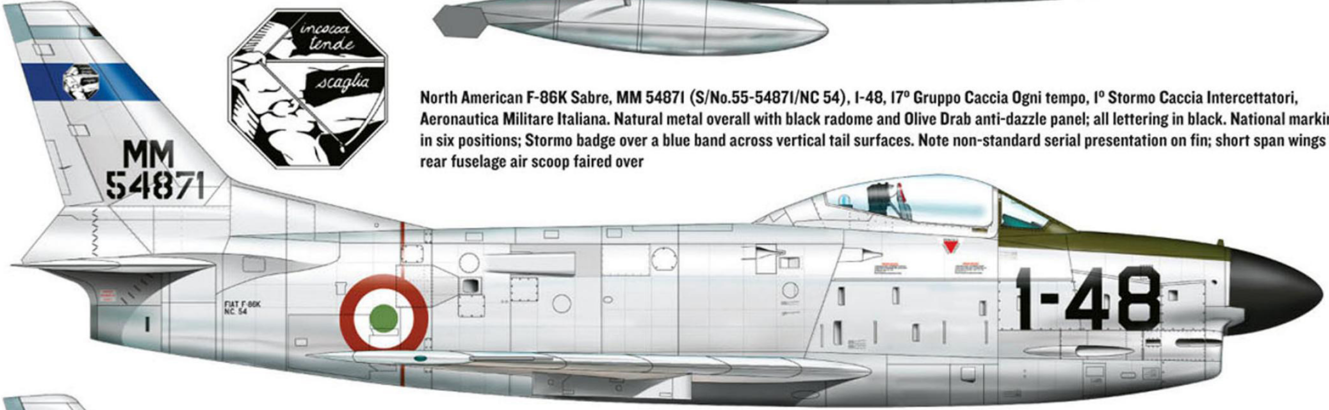


Above: North American F-86K Sabre, S/No.54-1241 (B/Nr.213-11), FU-241, wearing temporary USAF markings, 1955. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings on fuselage sides, above port and below starboard wings. Later delivered to Norway, survives at Hvalsmoen. Short span wings

North American F-86K Sabre, S/No.55-4925 (B/Nr.232-165), FU-925, in temporary USAF markings, Oberpfaffenhofen (Dornier Co plant). Same finish as above. National markings on fuselage side, above port and below starboard wings; short span wings. Delivered to the Luftwaffe from Turin and became JD-252, JD-352; later to Venezuela as FAV 0028

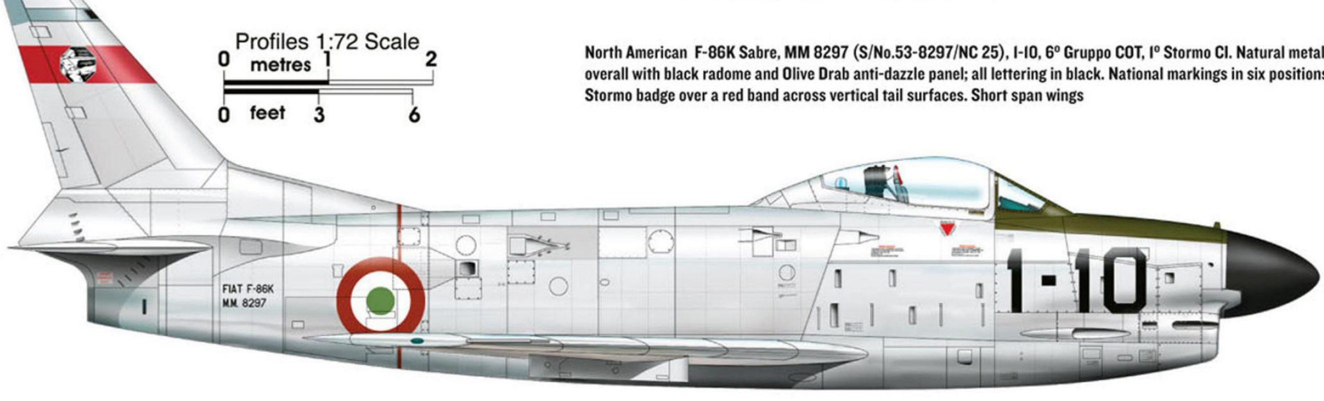


North American F-86K Sabre, MM 54871 (S/No.55-54871/NC 54), I-48, 17º Gruppo Caccia Ogni tempo, Iº Stormo Caccia Intercettatori, Aeronautica Militare Italiana. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; Stormo badge over a blue band across vertical tail surfaces. Note non-standard serial presentation on fin; short span wings and rear fuselage air scoop faired over

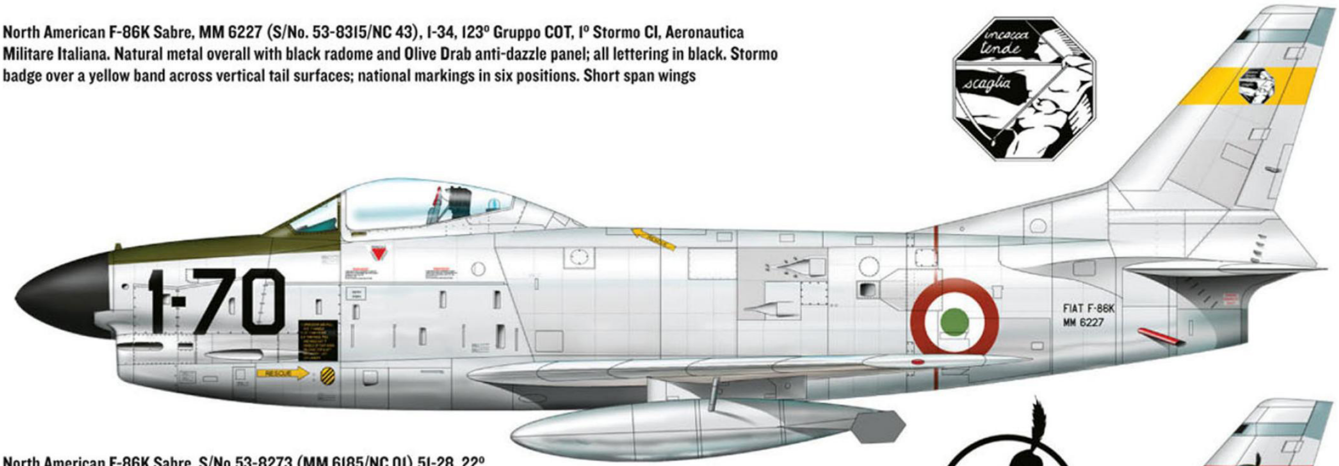


Profiles 1:72 Scale
0 metres 1 2
0 feet 3 6

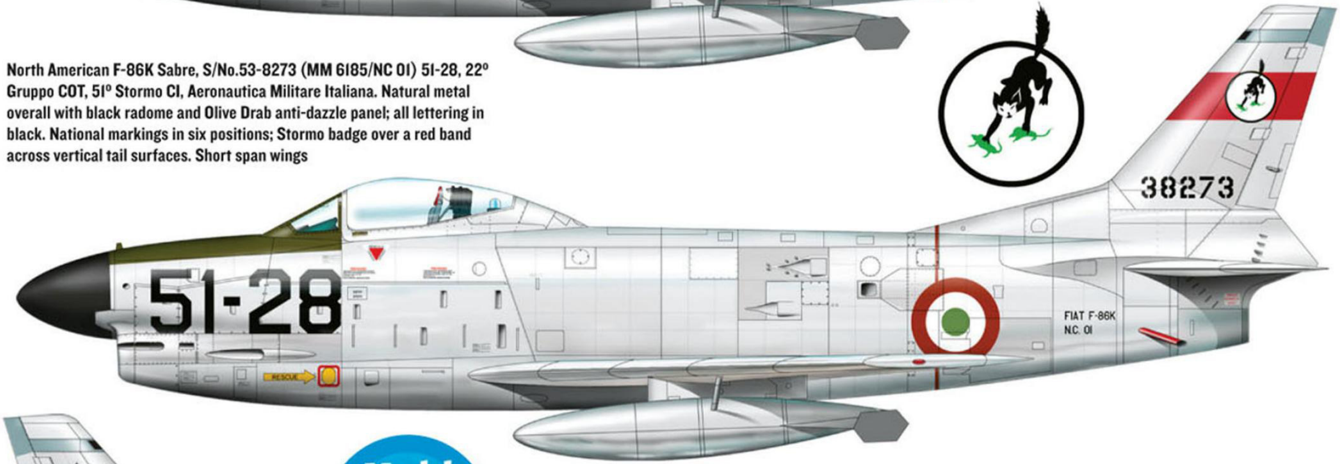
North American F-86K Sabre, MM 8297 (S/No.53-8297/NC 25), I-10, 6º Gruppo COT, Iº Stormo CI. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; Stormo badge over a red band across vertical tail surfaces. Short span wings



North American F-86K Sabre, MM 6227 (S/No. 53-8315/NC 43), 1-34, 123° Gruppo COT, 1° Stormo CI, Aeronautica Militare Italiana. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. Stormo badge over a yellow band across vertical tail surfaces; national markings in six positions. Short span wings



North American F-86K Sabre, S/No.53-8273 (MM 6185/NC 01) 51-28, 22° Gruppo COT, 51° Stormo CI, Aeronautica Militare Italiana. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; Stormo badge over a red band across vertical tail surfaces. Short span wings



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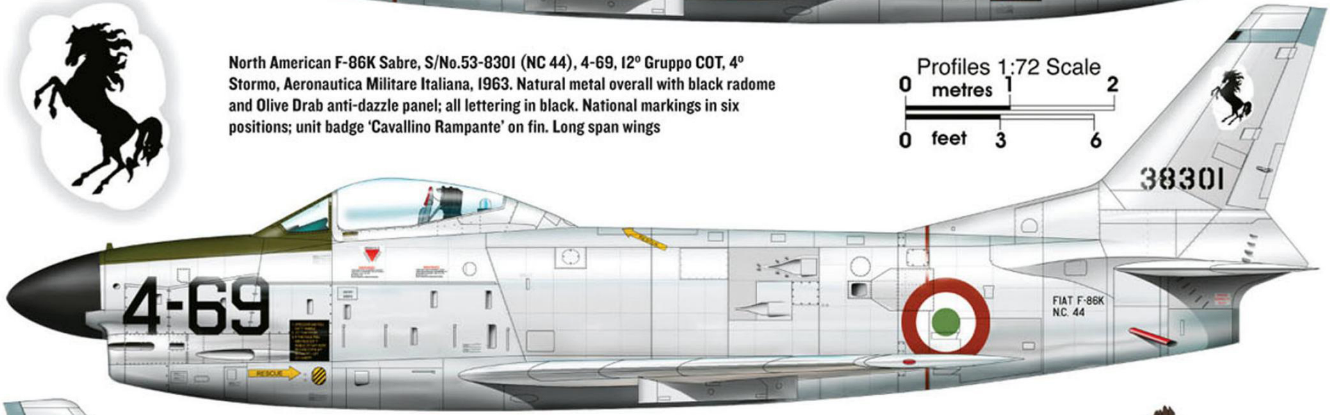
North American F-86K, S/No.55-4818 (MM 6230/NC 46), 51-60, 23° Gruppo COT, 51° Stormo CI, Aeronautica Militare Italiana. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. Stormo badge over a yellow band across vertical tail surfaces. Long span wings

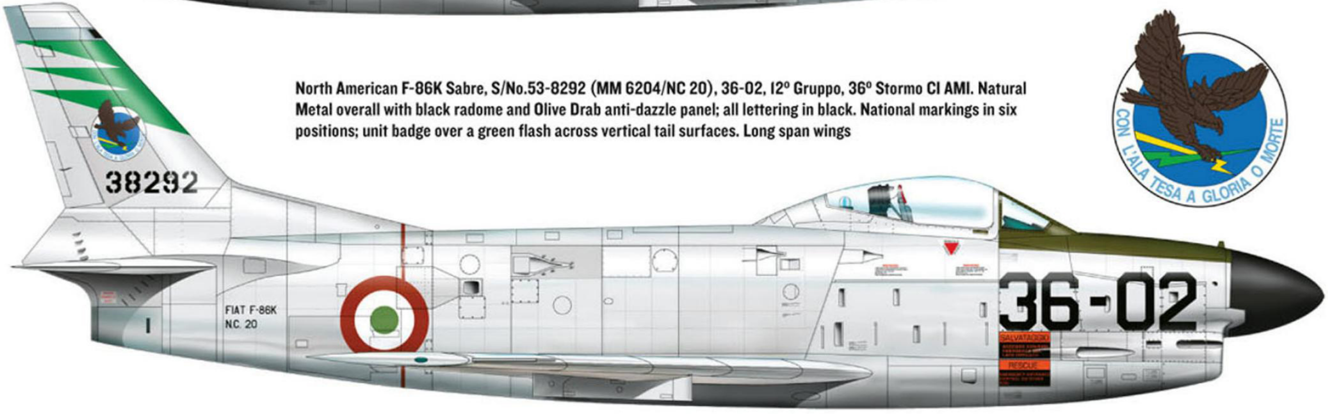
North American F-86K Sabre, S/No.53-8301 (NC 44), 4-69, 12° Gruppo COT, 4° Stormo, Aeronautica Militare Italiana, 1963. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; unit badge 'Cavallino Rampante' on fin. Long span wings

Profiles 1:72 Scale

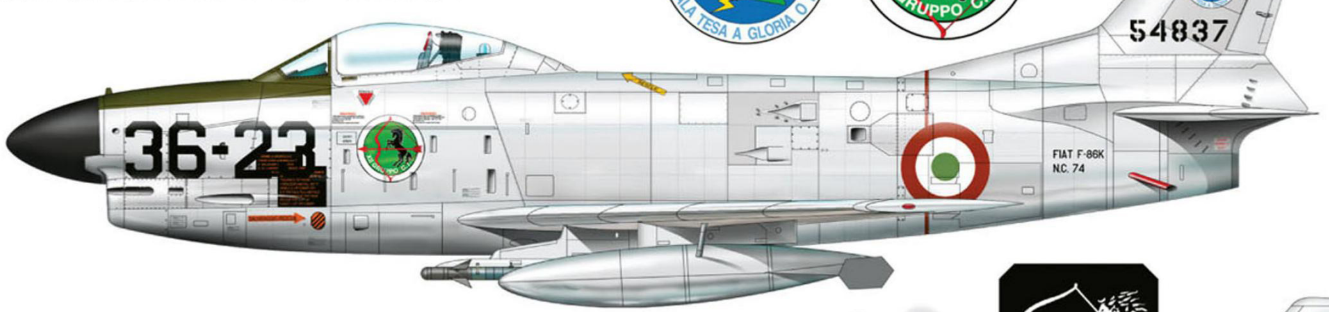
0	metres 1	2
0	feet 3	6



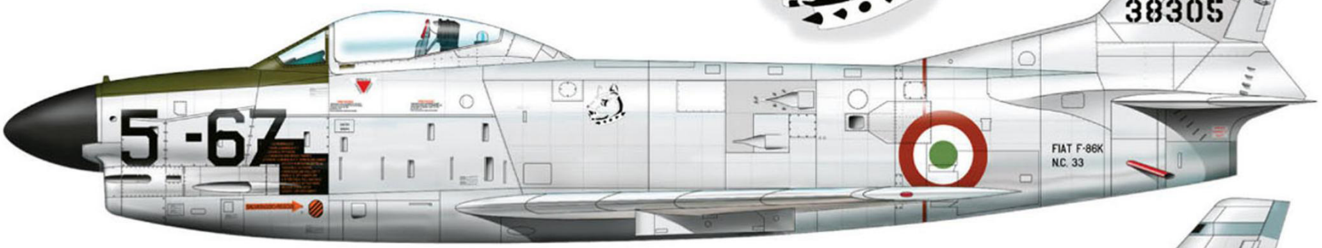
North American F-86K Sabre, S/No.53-8292 (MM 6204/NC 20), 36-02, 12° Gruppo, 36° Stormo CI AMI. Natural Metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; unit badge over a green flash across vertical tail surfaces. Long span wings



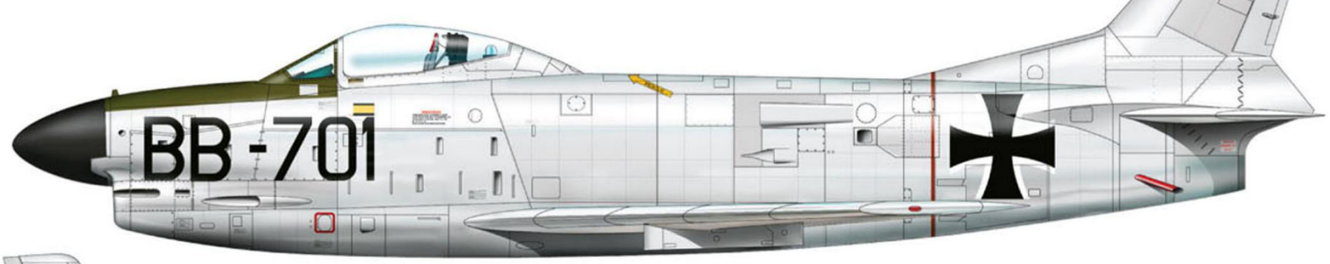
North American F-86K Sabre, S/No.55-4837 (NC 74), 36-23, 12º Gruppo COT, 36º Stormo CI, Aeronautica Militare Italiana, Gioia Del Colle, 1967. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; Stormo badge over a green flash across vertical tail surfaces. Gruppo badge below cockpit; long span wings. Note practice Sidewinder fitted to Aero-3B inboard pylon



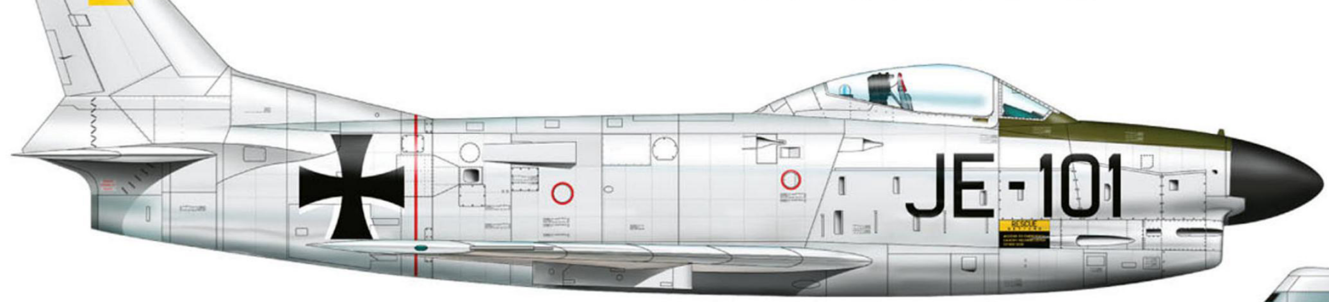
North American F-86K Sabre, S/No.53-8308 (MM 6217/NC 33), 5-67, 5º Stormo, 23º Gruppo CI, Aeronautica Militare Italiana, 1973. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; unit badge over a yellow band across vertical tail surfaces. 'Bulldog Head' marking of EC 2/12 Armée de l'Air zapped on both fuselage sides. Long-span wings; this is how 5-67 appeared when it was donated to the Militaire Luchtvaart Museum (Holland) on 12 June 1973 where it is now displayed as Q-305



North American F-86K Sabre, S/No.56-4140 (B.Nr. 242-201), BB-701 in early Luftwaffe markings as displayed at an Air Show at Kaufbeuren, early 1960s. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; short span wings



North American F-86K Sabre, S/No.55-4920 (CN 232-160), JE-101, 3./WaSLw 10, Luftwaffe, 1959. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; short span wings



North American F-86K Sabre, S/No.56-4148 (CN 242-209), JD-112, I./JG 75, Luftwaffe. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; short span wings. Later became JD-315 and eventually handed over to Venezuela

Profiles 1:72 Scale
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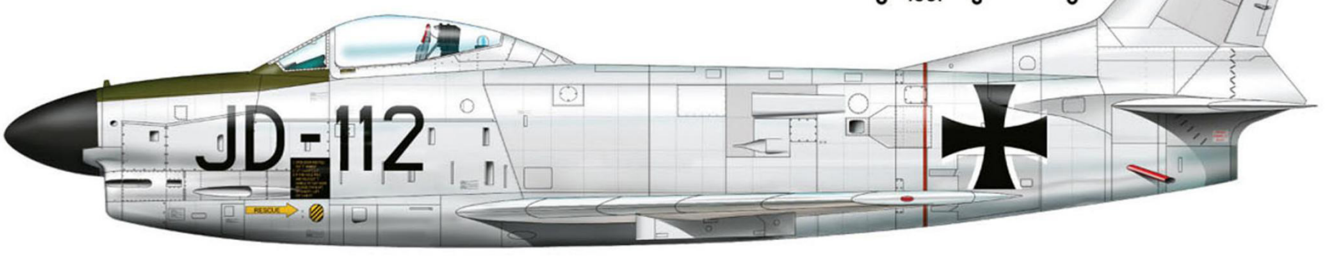

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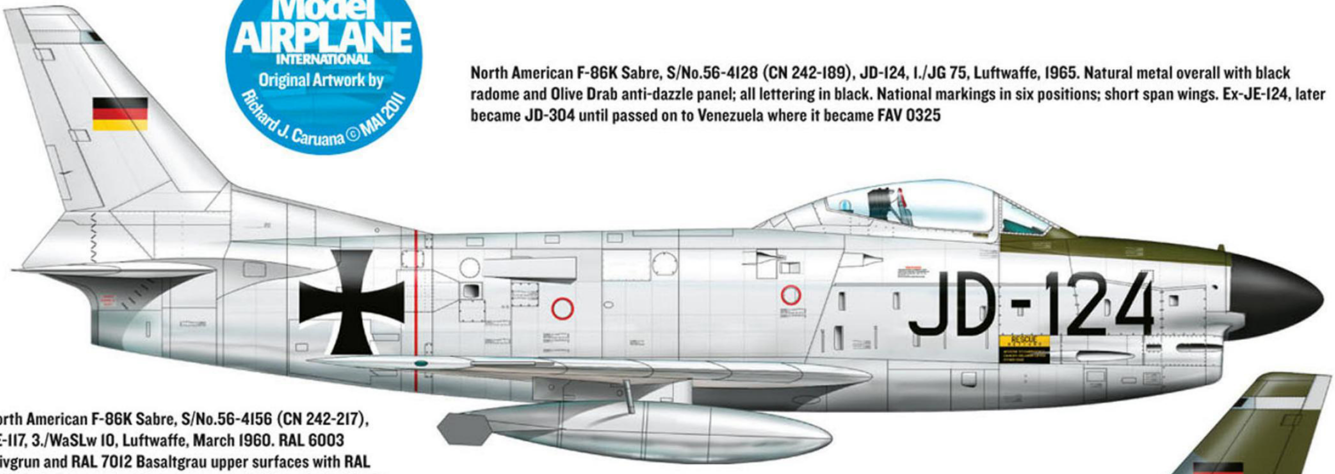
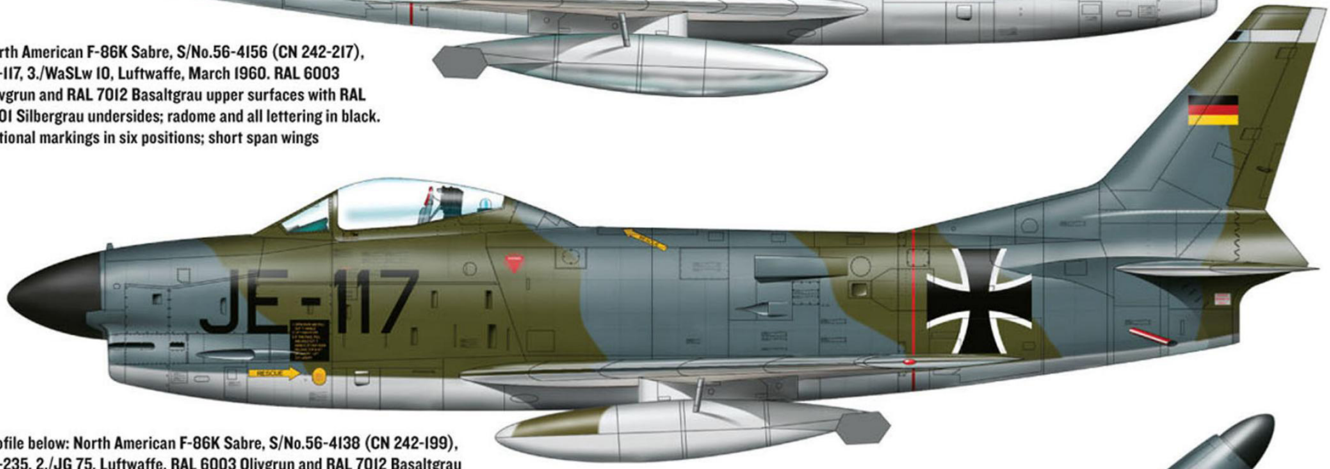
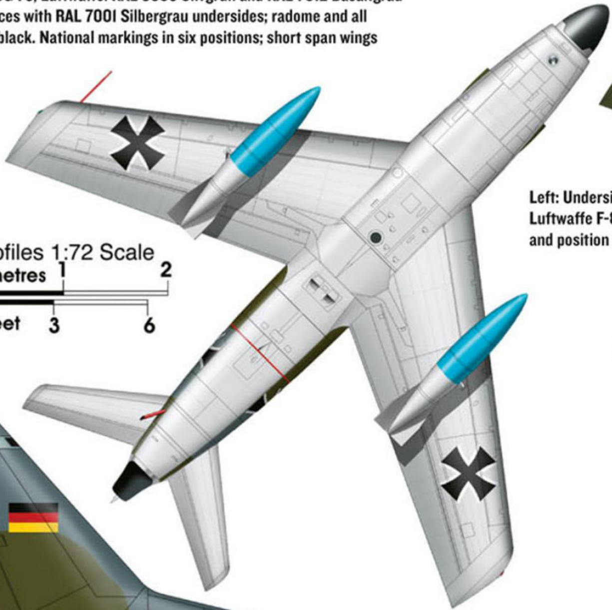
North American F-86K Sabre, S/No.56-4128 (CN 242-189), JD-124, I./JG 75, Luftwaffe, 1965. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; short span wings. Ex-JE-124, later became JD-304 until passed on to Venezuela where it became FAV 0325



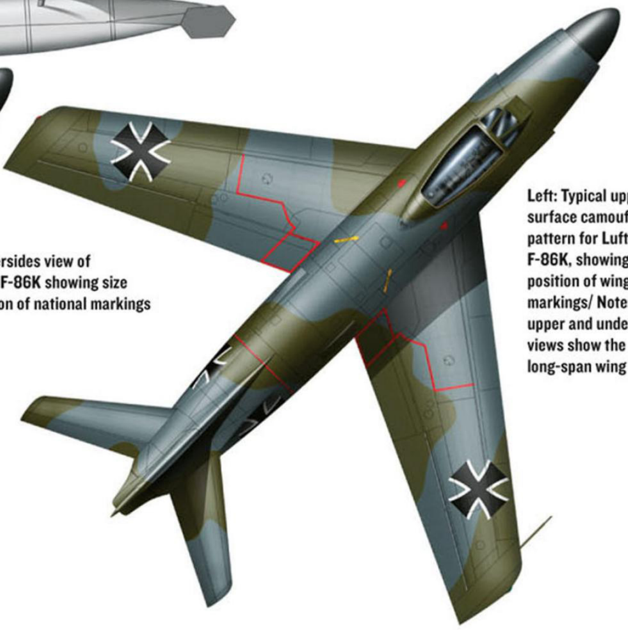
North American F-86K Sabre, S/No.56-4156 (CN 242-217), JE-117, 3./WaSLw 10, Luftwaffe, March 1960. RAL 6003 Olivgrun and RAL 7012 Basaltgrau upper surfaces with RAL 7001 Silbergrau undersides; radome and all lettering in black. National markings in six positions; short span wings



Profile below: North American F-86K Sabre, S/No.56-4138 (CN 242-199), JE-235, 2./JG 75, Luftwaffe. RAL 6003 Olivgrun and RAL 7012 Basaltgrau upper surfaces with RAL 7001 Silbergrau undersides; radome and all lettering in black. National markings in six positions; short span wings



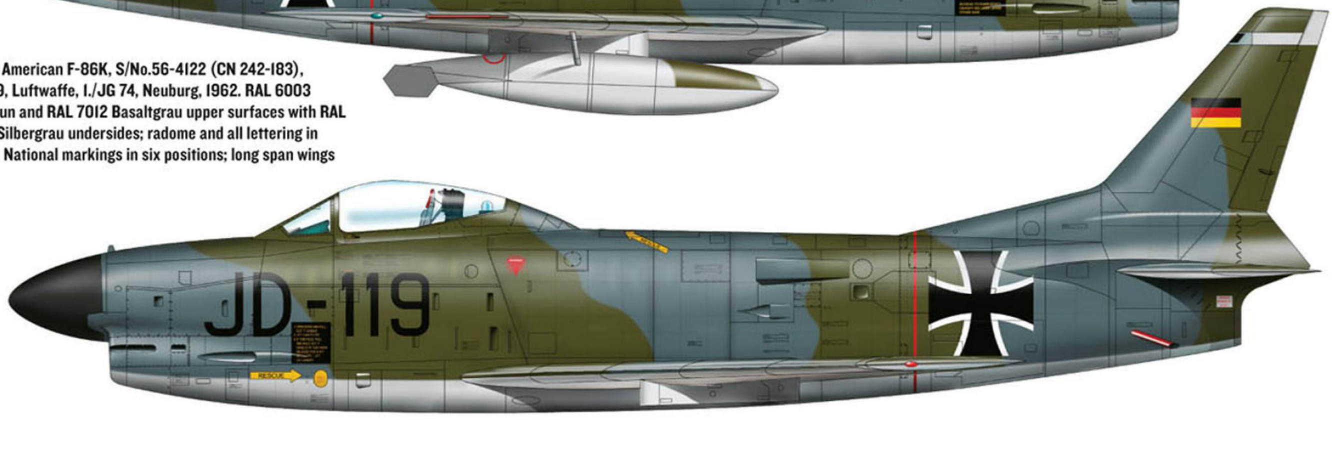
Left: Undersides view of Luftwaffe F-86K showing size and position of national markings



Left: Typical upper surface camouflage pattern for Luftwaffe F-86K, showing also position of wing markings/ Note: both upper and underside views show the long-span wing version

Profiles 1:72 Scale
0 metres 1 2
0 feet 3 6

North American F-86K, S/No.56-4122 (CN 242-183), JD-119, Luftwaffe, I./JG 74, Neuburg, 1962. RAL 6003 Olivgrun and RAL 7012 Basaltgrau upper surfaces with RAL 7001 Silbergrau undersides; radome and all lettering in black. National markings in six positions; long span wings

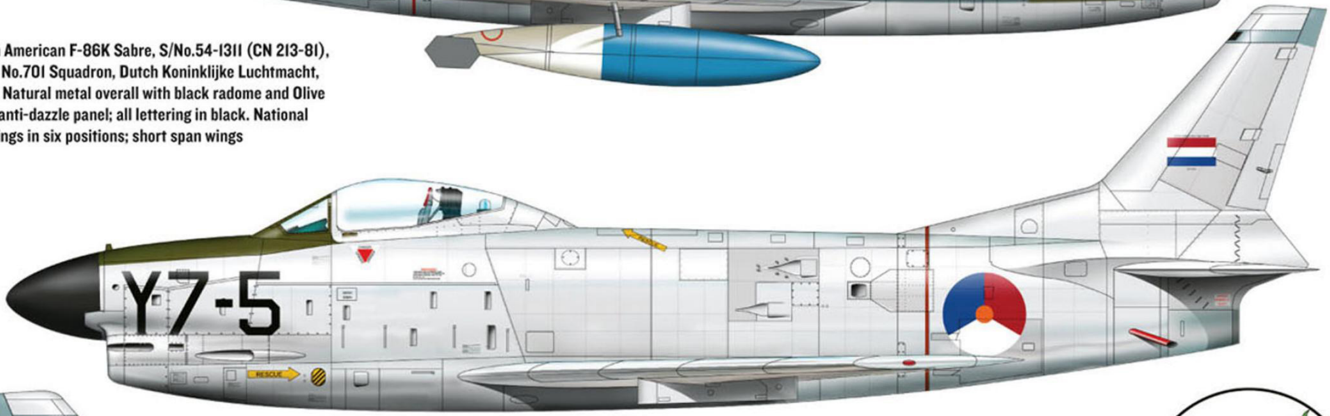


North American F-86K Sabre, S/No.56-4126 (CN 242-187), JD-122, I./JG 74, Luftwaffe. RAL 6003 Olivgrun and RAL 7012 Basaltgrau upper surfaces with RAL 7001 Silbergrau undersides; radome and all lettering in black. National markings in six positions; unit badge on fin. Long-span wings; blue/white underwing tanks. Note subtle changes in markings, including different style of code letter 'D' and smaller fin flash carried further down to accommodate the unit badge. To Venezuela as FAV 0187

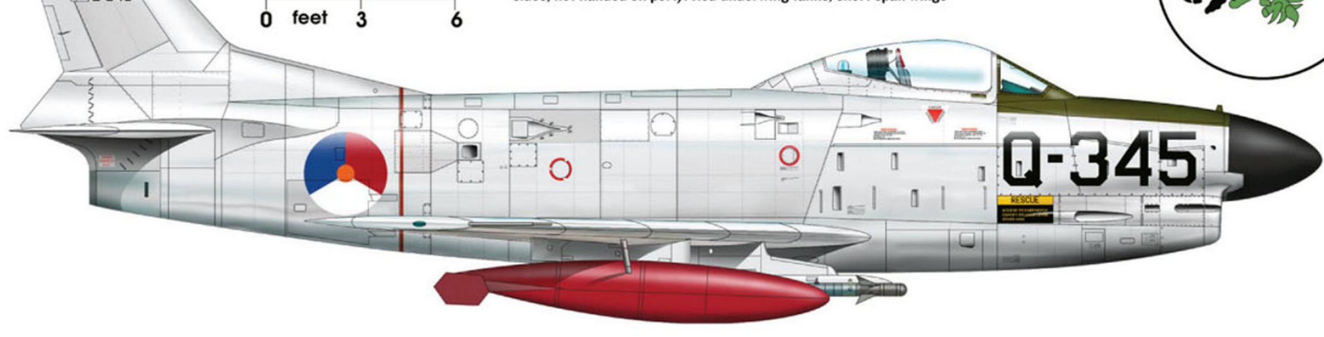
North American F-86K Sabre, S/No.55-4925 (CN 232-165), JD-252, 2./JG 74, Luftwaffe, Neuburg, March 1963. RAL 6003 Olivgrun and RAL 7012 Basaltgrau upper surfaces with RAL 7001 Silbergrau undersides; radome and all lettering in black. National markings in six positions; unit badge on fin. Long-span wings; later became JD-352, to Venezuela as FAV 0028

North American F-86K Sabre, S/No.56-4152 (CN 242-213), JD-348, 3./JG 74, Luftwaffe, late 1964. RAL 6003 Olivgrun and RAL 7012 Basaltgrau upper surfaces with RAL 7001 Silbergrau undersides; radome and all lettering in black. National markings in six positions; unit badge on fin. Blue/white underwing tanks; long-span wings. 3./JG 74 was formed from elements of I and 2 Staffel in March 1964. To Venezuela as FAV 1130

North American F-86K Sabre, S/No.54-1311 (CN 213-81), Y7-5, No.701 Squadron, Dutch Koninklijke Luchtmacht, 1958. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; short span wings



North American F-86K Sabre, S/No.54-1345 (CN 213-115), Q-345, No.700 Squadron, Dutch Koninklijke Luchtmacht, 1961. Natural metal overall with black radome and Olive Green anti-dazzle panel; all lettering in black. National markings in six positions; unit badge on fin (both sides, not handed on port). Red underwing tanks; short span wings



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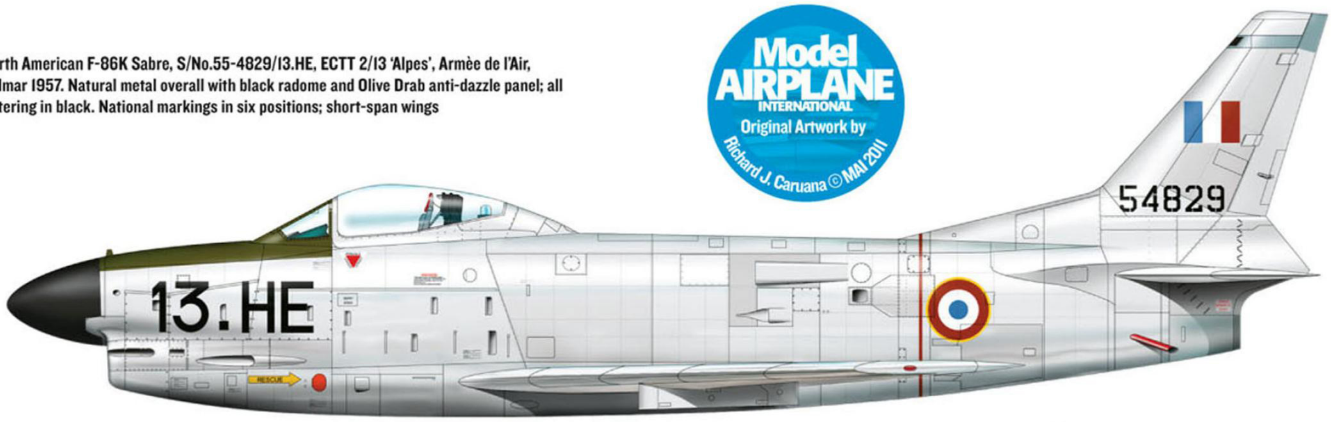
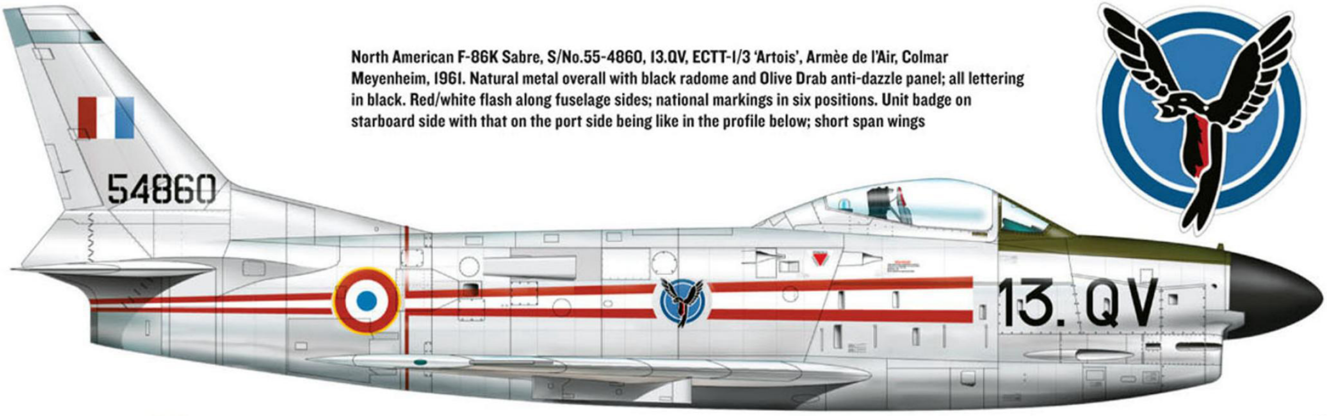
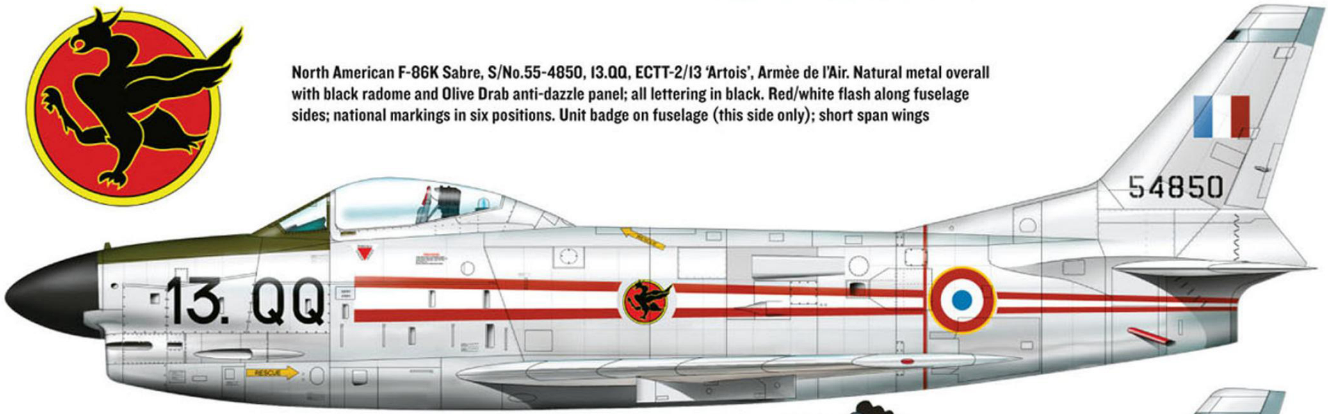
North American F-86K Sabre, S/No.55-4829/13.HE, ECTT 2/13 'Alpes', Armée de l'Air, Colmar 1957. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; short-span wings



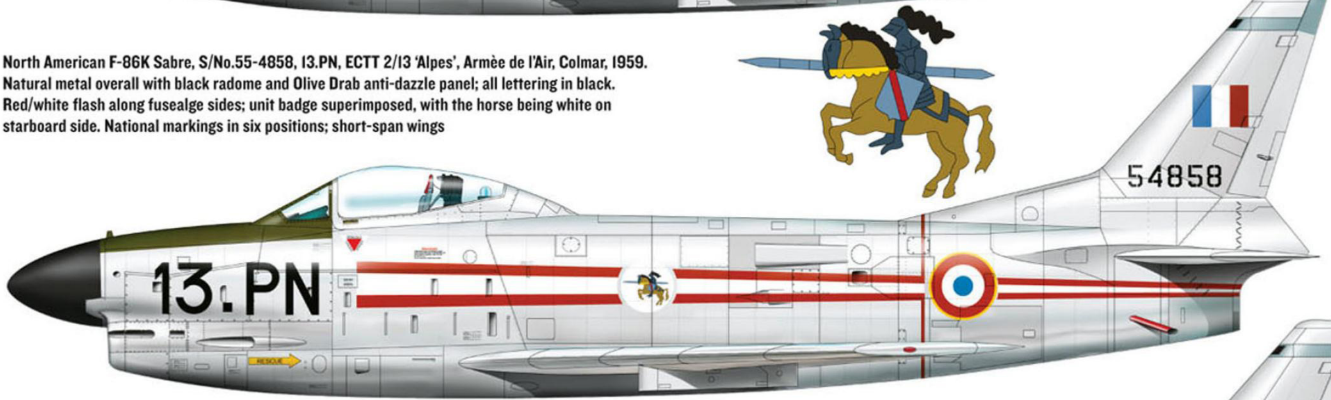
North American F-86K Sabre, S/No.55-4860, 13.QV, ECTT-1/3 'Artois', Armée de l'Air, Colmar Meyenheim, 1961. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. Red/white flash along fuselage sides; national markings in six positions. Unit badge on starboard side with that on the port side being like in the profile below; short span wings



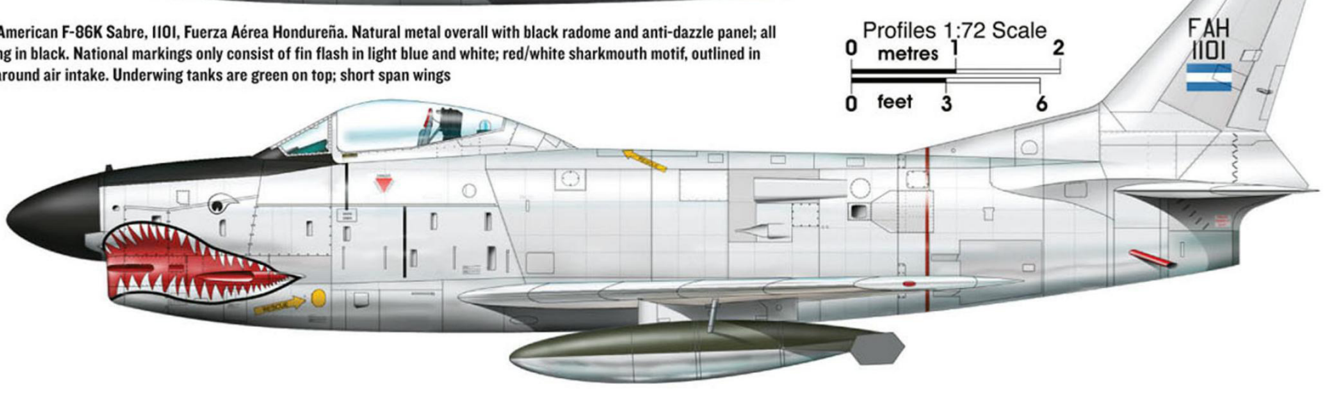
North American F-86K Sabre, S/No.55-4850, 13.QQ, ECTT-2/13 'Artois', Armée de l'Air. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. Red/white flash along fuselage sides; national markings in six positions. Unit badge on fuselage (this side only); short span wings



North American F-86K Sabre, S/No.55-4858, 13.PN, ECTT 2/13 'Alpes', Armée de l'Air, Colmar, 1959. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. Red/white flash along fusealge sides; unit badge superimposed, with the horse being white on starboard side. National markings in six positions; short-span wings



North American F-86K Sabre, 1101, Fuerza Aérea Hondureña. Natural metal overall with black radome and anti-dazzle panel; all lettering in black. National markings only consist of fin flash in light blue and white; red/white sharkmouth motif, outlined in black around air intake. Underwing tanks are green on top; short span wings



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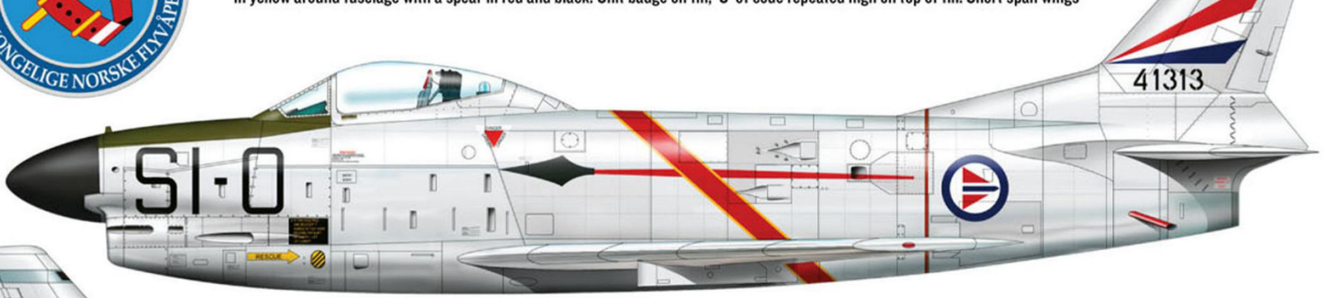
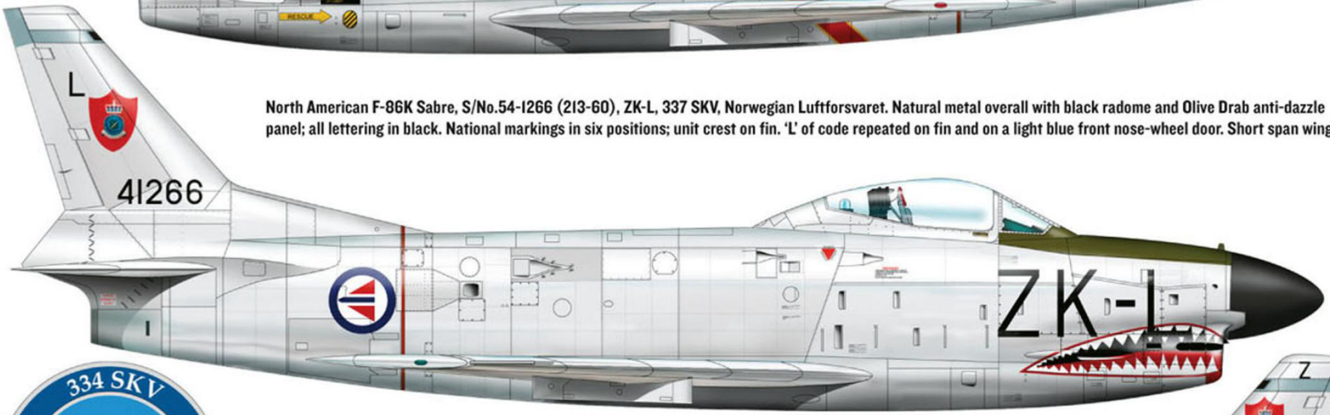
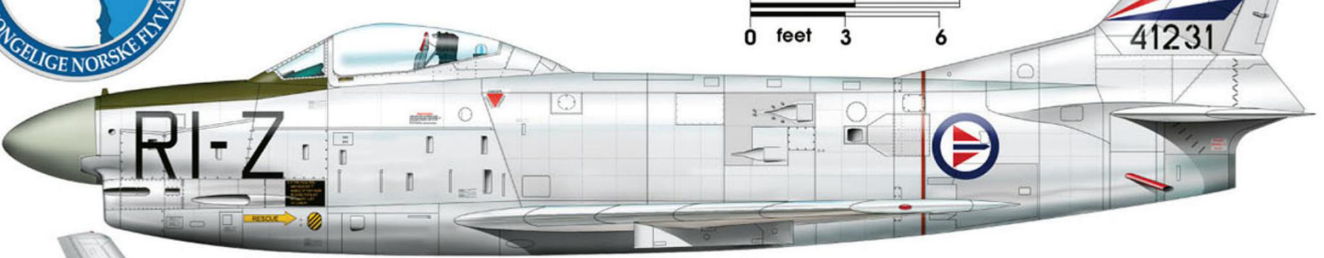
North American F-86K Sabre, S/No.54-1251 (213-21), 2X-A, 337 SKV, Norwegian Luftforsvaret. Natural metal overall with black radome and Olive Drab anit-dazzle panel; all lettering in black. National markings in six positions; short-span wings

North American F-86K Sabre, S/No. 54-1313 (C.Nr. 312-36), SI-O, 339 SKV, Norwegian Luftforsvaret. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; angled red band, outlined in yellow around fuselage with a spear in red and black. Unit badge on fin; 'O' of code repeated high on top of fin. Short span wings



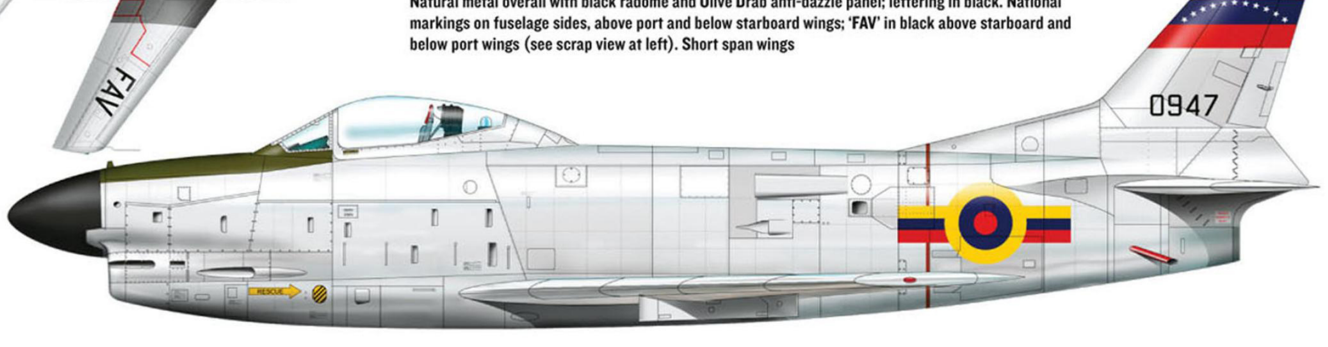
North American F-86K Sabre, S/No.54-1266 (213-60), ZK-L, 337 SKV, Norwegian Luftforsvaret. Natural metal overall with black radome and Olive Drab anti-dazzle panel; all lettering in black. National markings in six positions; unit crest on fin. 'L' of code repeated on fin and on a light blue front nose-wheel door. Short span wings

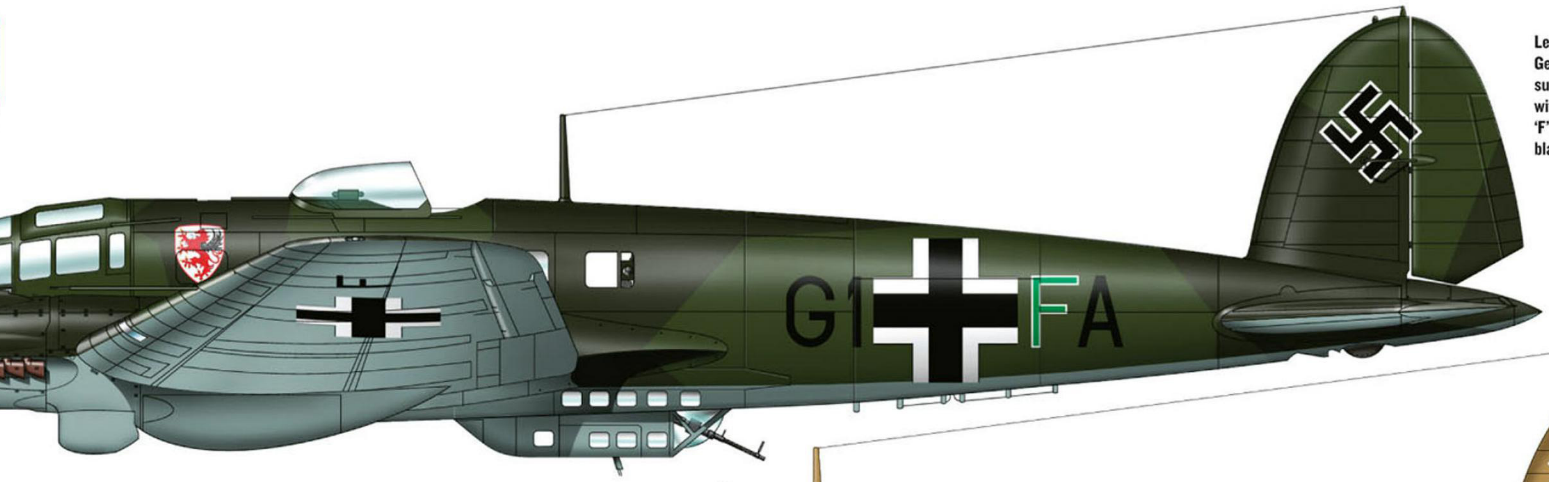




Above: North American F-86K Sabre, S/No.54-1231 (213-1), RI-Z, 334 SKV, Norwegian Luftforsvaret. Natural metal overall with light grey radome and Olive Drab anti-dazzle panel; all lettering in black. Red/white/blue flash on fin with unit crest above it; national markings in six positions. 'Z' repeated in black high above the fin and on front nosewheel door; short-span wings

Below: North American F-86K Sabre, 0947, Escuadron de Caza 35, Fuerza Aérea Venezolana, 1970. Natural metal overall with black radome and Olive Drab anti-dazzle panel; lettering in black. National markings on fuselage sides, above port and below starboard wings; 'FAV' in black above starboard and below port wings (see scrap view at left). Short span wings





Left: Heinkel He 111P-2, G1+FA, Geschwaderstab KG 55, France summer 1940. RLM 70/71/65 finish with green individual aircraft letter 'F' (outlined in white); codes in black. 'F' repeated below wings

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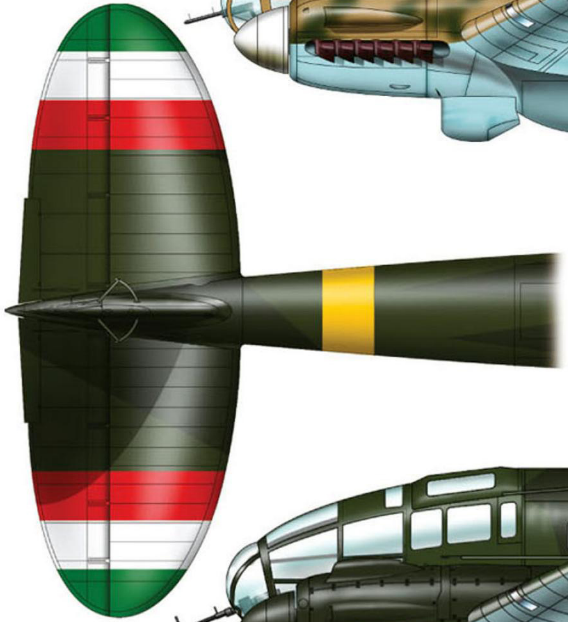
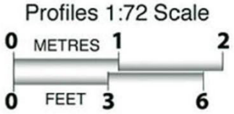
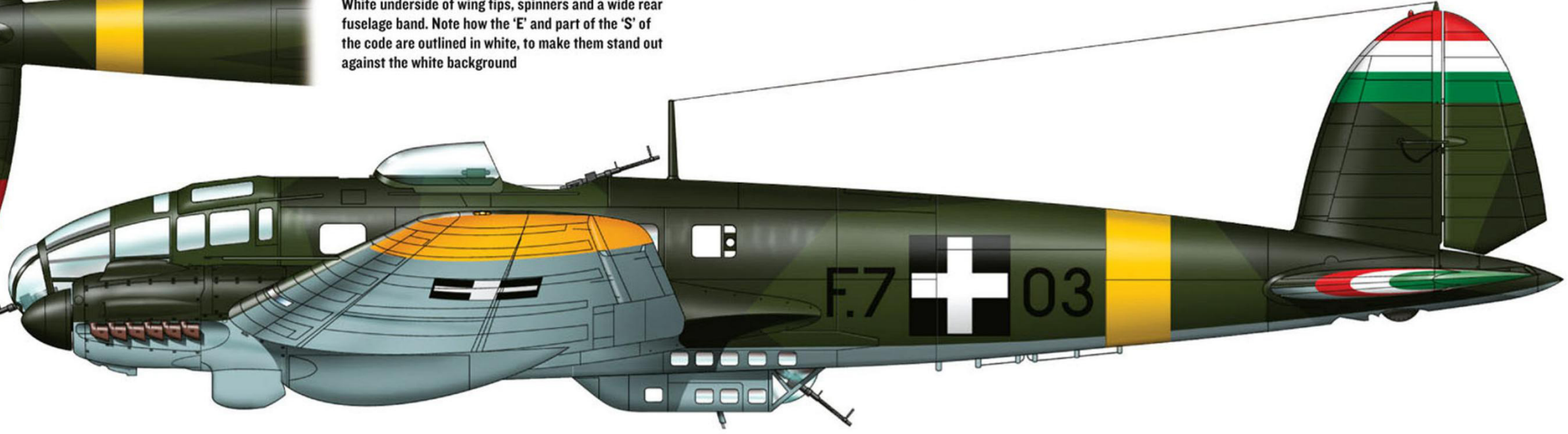


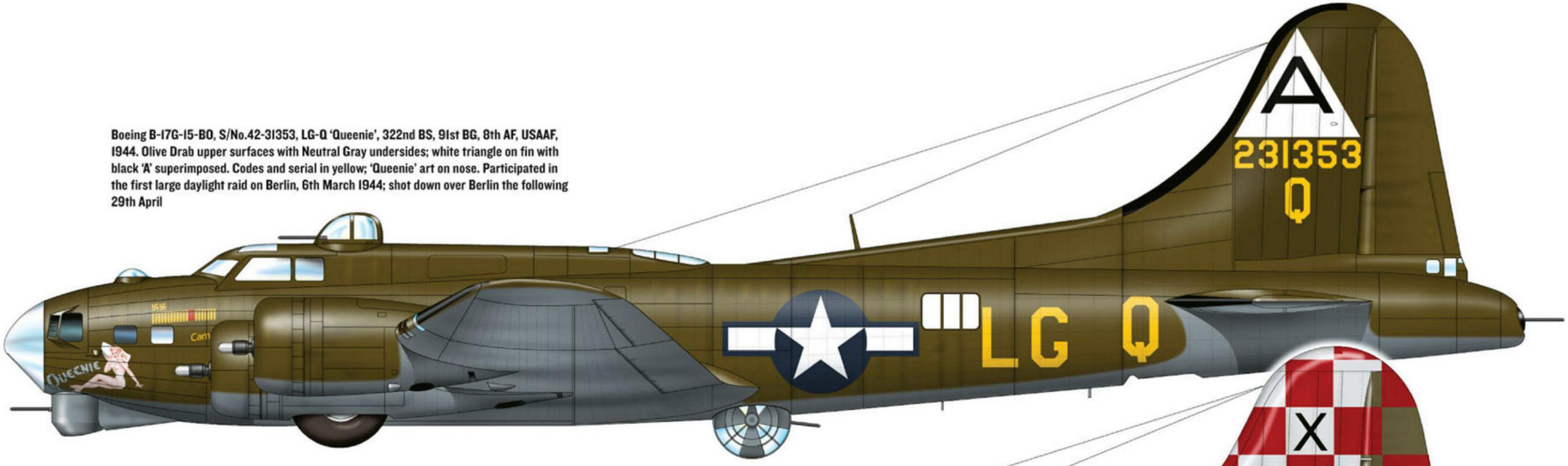
Above: Heinkel He 111P-4, VG+ES, of Korpskette X, Fliegerkorps, Western Desert, winter 1941-42. Sandgelb RLM 79 upper surfaces (FS.33434) with mottling of (probably) RLM 71, and Hellblau RLM 65 undersides. White underside of wing tips, spinners and a wide rear fuselage band. Note how the 'E' and part of the 'S' of the code are outlined in white, to make them stand out against the white background

Below: Heinkel He 111P-2, F.7+03, 1/1 Távolfelderitő Század, Hungarian Air Force, Poltava (Russia), January 1943. RLM 70/71/65 finish with Gelb RLM 04 rear fuselage band and underside of wing tips; Hungarian crosses in white on black square in six positions. Green/white/red bands across top of fin/rudder and outer sections of horizontal tail surfaces

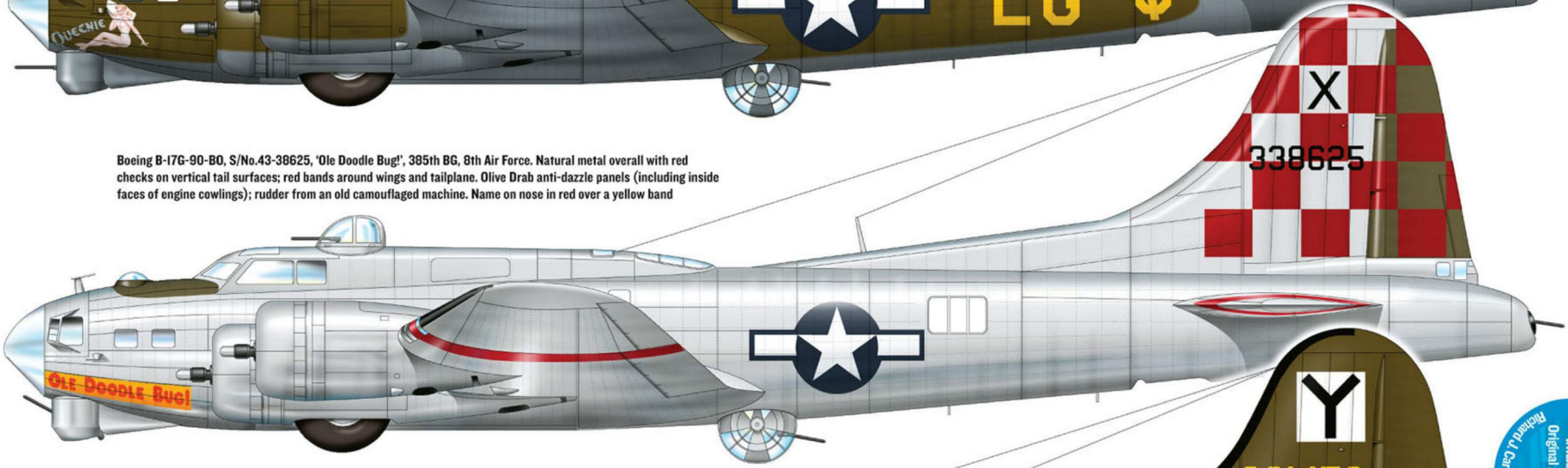




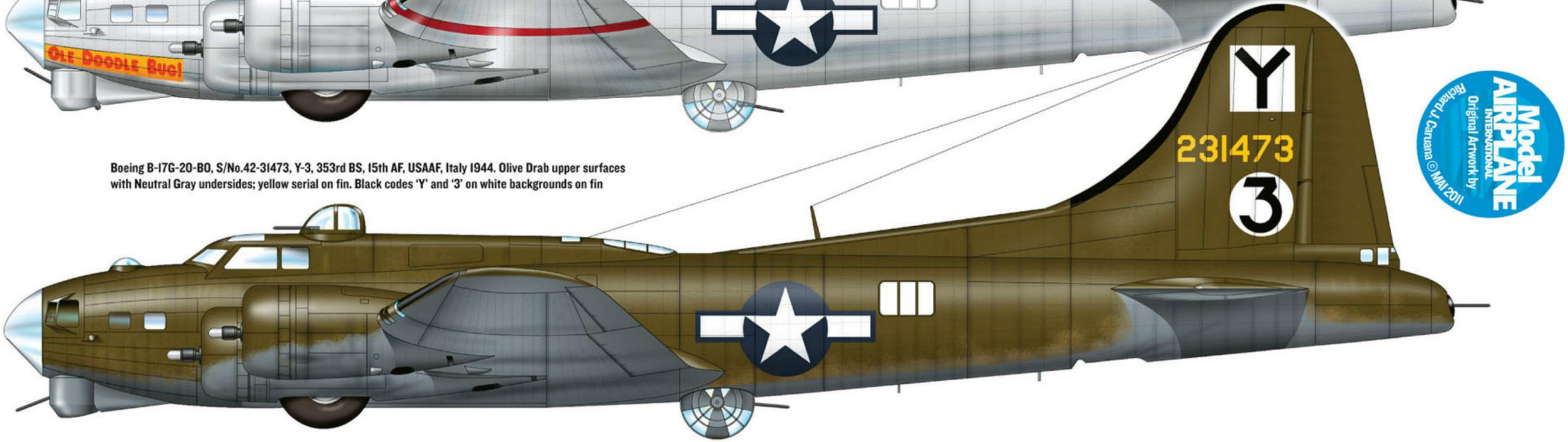
Boeing B-17G-15-BO, S/No.42-31353, LG-Q 'Queenie', 322nd BS, 91st BG, 8th AF, USAAF, 1944. Olive Drab upper surfaces with Neutral Gray undersides; white triangle on fin with black 'A' superimposed. Codes and serial in yellow; 'Queenie' art on nose. Participated in the first large daylight raid on Berlin, 6th March 1944; shot down over Berlin the following 29th April

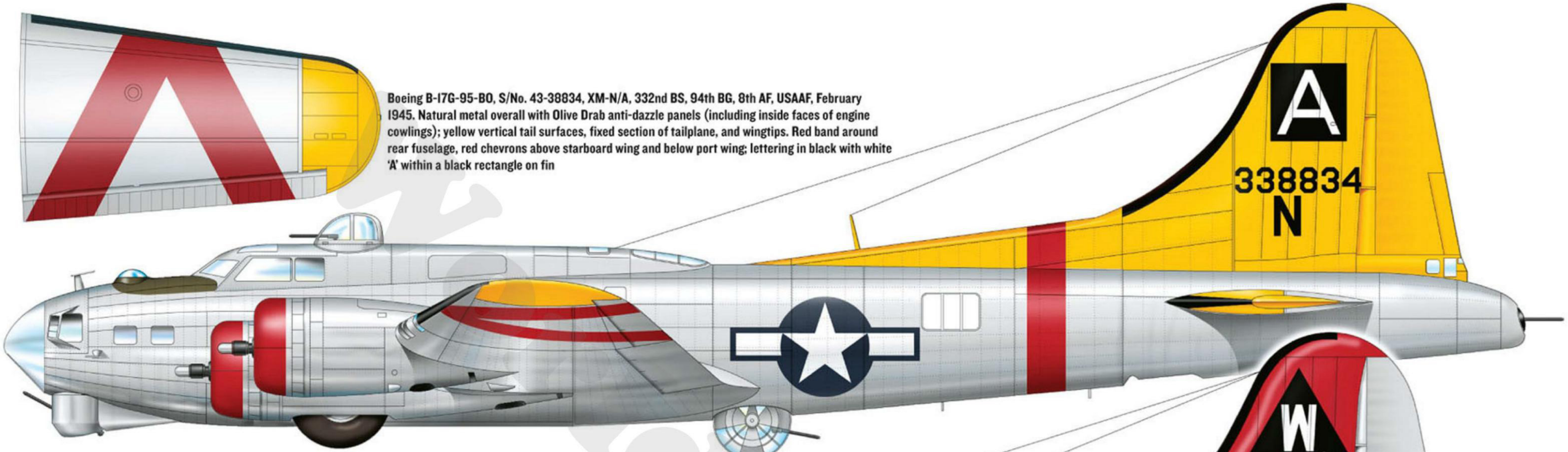


Boeing B-17G-90-BO, S/No.43-38625, 'Ole Doodle Bug!', 385th BG, 8th Air Force. Natural metal overall with red checks on vertical tail surfaces; red bands around wings and tailplane. Olive Drab anti-dazzle panels (including inside faces of engine cowlings); rudder from an old camouflaged machine. Name on nose in red over a yellow band

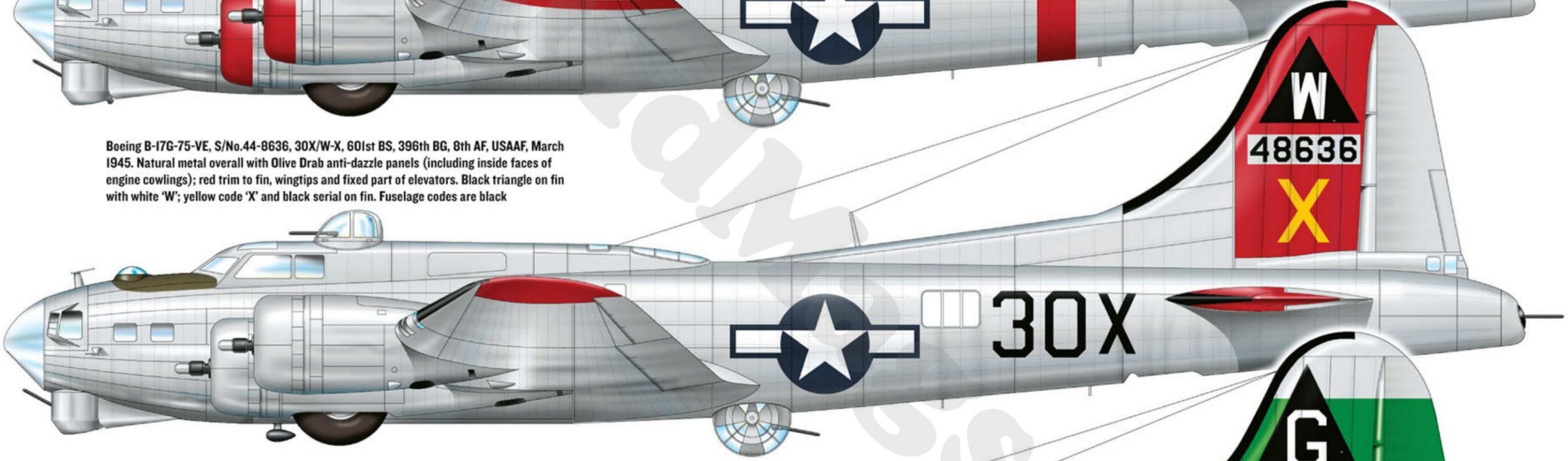


Boeing B-17G-20-BO, S/No.42-31473, Y-3, 353rd BS, 15th AF, USAAF, Italy 1944. Olive Drab upper surfaces with Neutral Gray undersides; yellow serial on fin. Black codes 'Y' and '3' on white backgrounds on fin

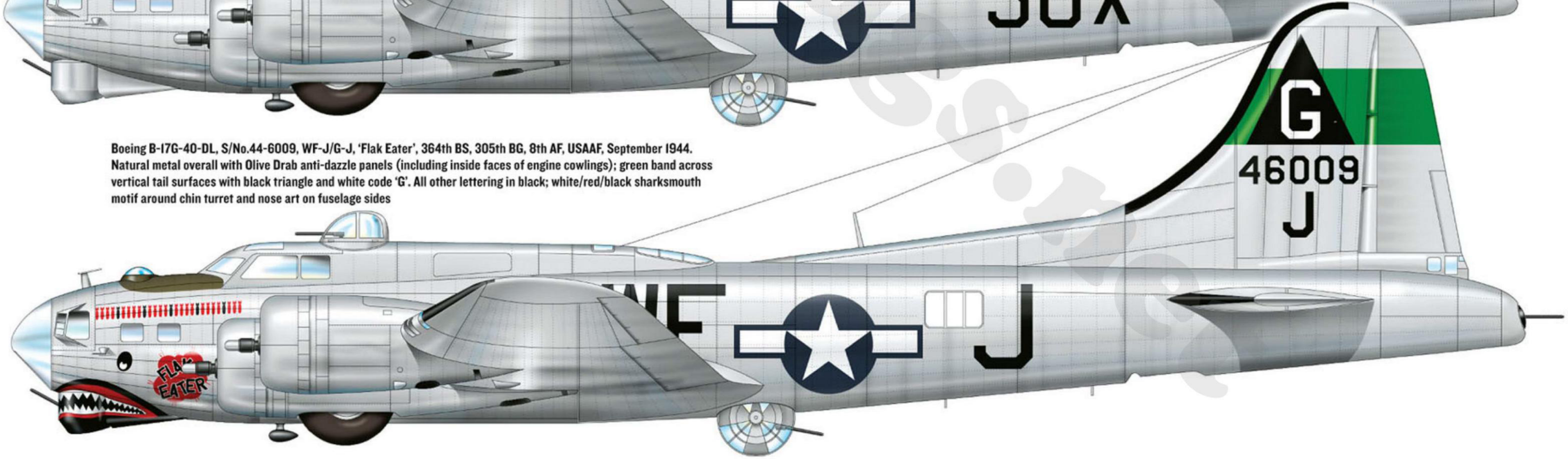




Boeing B-17G-95-BO, S/No. 43-38834, XM-N/A, 332nd BS, 94th BG, 8th AF, USAAF, February 1945. Natural metal overall with Olive Drab anti-dazzle panels (including inside faces of engine cowlings); yellow vertical tail surfaces, fixed section of tailplane, and wingtips. Red band around rear fuselage, red chevrons above starboard wing and below port wing; lettering in black with white 'A' within a black rectangle on fin



Boeing B-17G-75-VE, S/No.44-8636, 30X/W-X, 601st BS, 396th BG, 8th AF, USAAF, March 1945. Natural metal overall with Olive Drab anti-dazzle panels (including inside faces of engine cowlings); red trim to fin, wingtips and fixed part of elevators. Black triangle on fin with white 'W'; yellow code 'X' and black serial on fin. Fuselage codes are black



Boeing B-17G-40-DL, S/No.44-6009, WF-J/G-J, 'Flak Eater', 364th BS, 305th BG, 8th AF, USAAF, September 1944. Natural metal overall with Olive Drab anti-dazzle panels (including inside faces of engine cowlings); green band across vertical tail surfaces with black triangle and white code 'G'. All other lettering in black; white/red/black sharksmouth motif around chin turret and nose art on fuselage sides

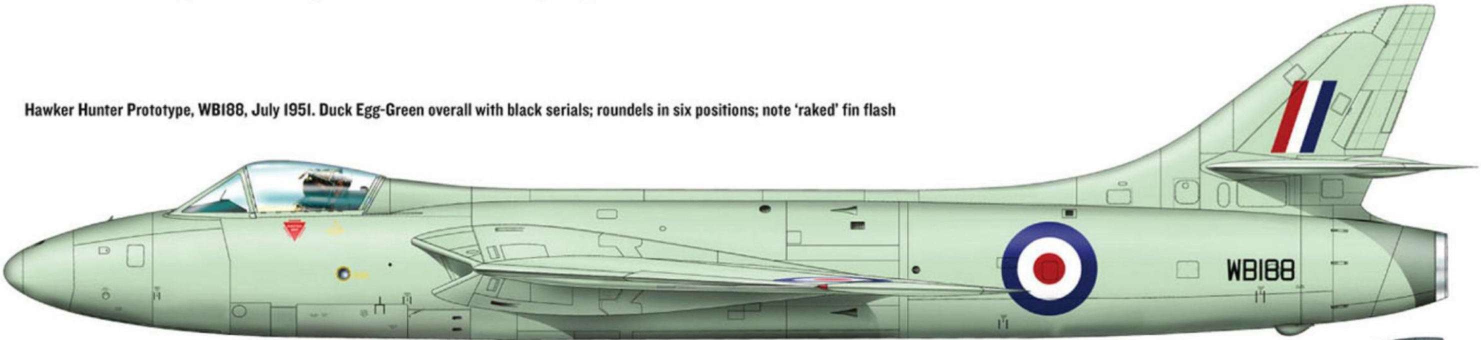
HAWKER Hunter *Part One*

Hawker Hunter Production Mks 1-5

Prototypes: WB188, WB195, WB202
F Mk 1: WT555-596, WT611-600, WT679-700, WW599-610, WW632-645
F Mk 2: WN888-921, WN943-953
F Mk 3: WB188 (converted from prototype)
F Mk 4: WT701-723, WT734-780, WT795-811, WV253-281, WV314-334, WV363-412, WW589-591, WW646-665, XE657-689, XE702-718, XF289-324, XF357-370, XF932-953, XF967-999, XG341-342
F Mk 5: WN954-992, WP101-150, WP179-194

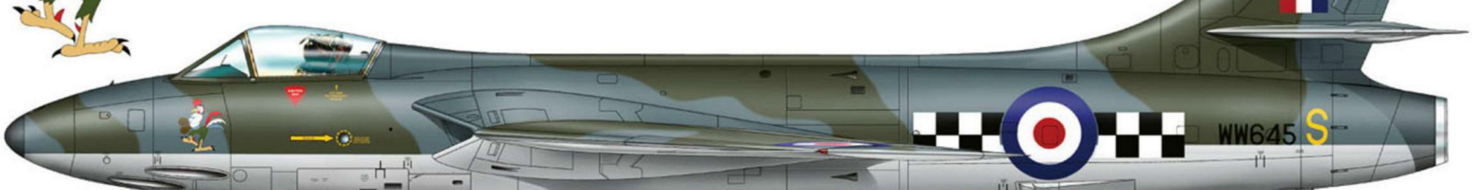
Note: The Hunter logo in the heading was traced from a contemporary Hawker Aircraft Ltd advert

Hawker Hunter Prototype, WB188, July 1951. Duck Egg-Green overall with black serials; roundels in six positions; note 'raked' fin flash



Hawker Hunter F Mk 1, WT641/T, No.43 Squadron, RAF Leuchars, July 1954. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black/white checks flanking fuselage roundels. Serial in black, white code 'T' on rear fuselage repeated on nosewheel door

Hawker Hunter F Mk 1, WW645/S, No.43 Squadron 'Fighting Cocks', RAF Leuchars, 1955. Dark Sea Grey BS 638/ Dark Green BS 641 upper surfaces with Aluminium; black/white checks flanking fuselage roundel. Black serial, repeated below wings; yellow code 'S' on rear fuselage, repeated on nosewheel door. Unit badge on nose; last production F.1



Hawker Hunter F Mk 1, WT815/O, No .222 Squadron, RAF Leuchars, 1955. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; blue/red checks flanking fuselage roundel. Black serial, repeated below wings; white code 'O' on rear fuselage, repeated in black on nosewheel door

SCALE: 1/72

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Hawker Hunter F Mk I, WW636/Q, flown by 'B' Flight Commander, No.54 Squadron, RAF Odiham, 1955. Dark Sea Grey BS 638/ Dark Green BS 641 upper surfaces with Aluminium undersides; blue/yellow checks flanking unit marking on nose. Black serial repeated below wings; yellow 'Q' on fin, repeated on blue nosewheel door together with the squadron marking also in yellow. Blue fin with yellow flash; blue wingtips

Hawker Hunter F Mk I, WT617/D, Day Fighter Leader School, Central Fighter Establishment RAF, West Raynham, 1956. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; yellow trim to dorsal spine and fin leading edge. Black serial, repeated below wings; white code 'D' on rear fuselage

Hawker Hunter F Mk I, WW604/F, No.233 Operational Conversion Unit, RAF Pembry, 1957. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; yellow wingtips and code 'F' on rear fuselage. Black serial repeated below wings

Hawker Hunter F Mk 2, WN949/R, No.257 Squadron, RAF Wattisham, 1955. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; yellow/mid-green checks flanking fuselage roundels. Black serial, repeated below wings; yellow code 'R' on fin, outlined in mid-green, repeated in green on yellow nosewheel door

Hawker Hunter F Mk 2, WN907/H, No.257 Squadron, RAF Wattisham, 1956. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; yellow/mid-green checks flanking unit marking on nose. Black serial, repeated below wings; yellow code 'H' on fin, outlined in mid-green, repeated in mid-green on yellow nosewheel door

Hawker Hunter F Mk 2, WN900/D, No.263 Squadron, Wattisham, 1955. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; red bars with blue crosses flanking unit marking on nose. Black serials, repeated below wings; red code 'D', outlined in yellow, repeated on nosewheel door

SCALE: 1/72

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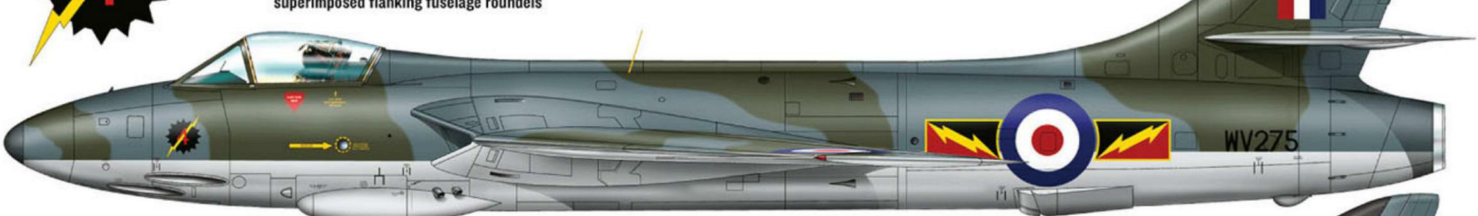
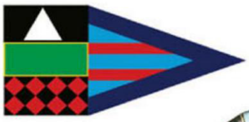
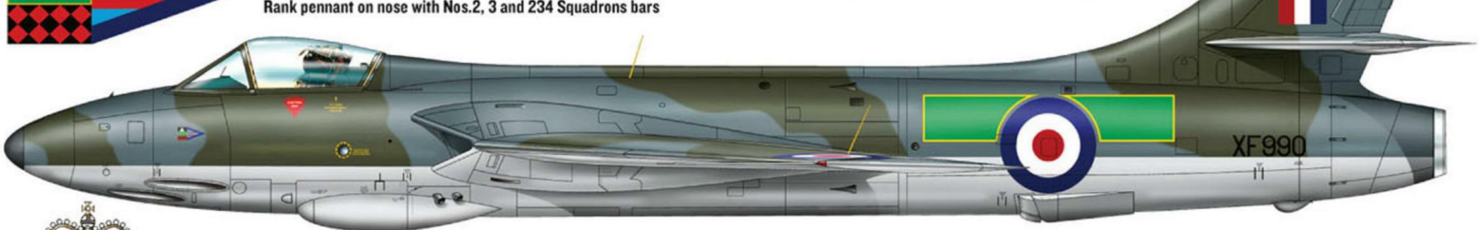
Hawker Hunter F Mk 4, XF976, No.3 Squadron, Geilenkirchen (RAF Germany). Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; No.441 Squadron Royal Canadian Air Force zaps include black/white checks on rear section of fuselage bars (green, outlined in yellow) and top of vertical tail surfaces, and Maple Leaf on the RAF roundel. Serials in black, repeated below wings

Hawker Hunter F Mk 4, WV275/D, No.4 Squadron, Jever (RAF Germany), early 1956. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serial, repeated below wing. Yellow code 'D' on fin, repeated in black on nosewheel door; unit badge on nose. Black/red bars, outlined in yellow with yellow flashes superimposed flanking fuselage roundels

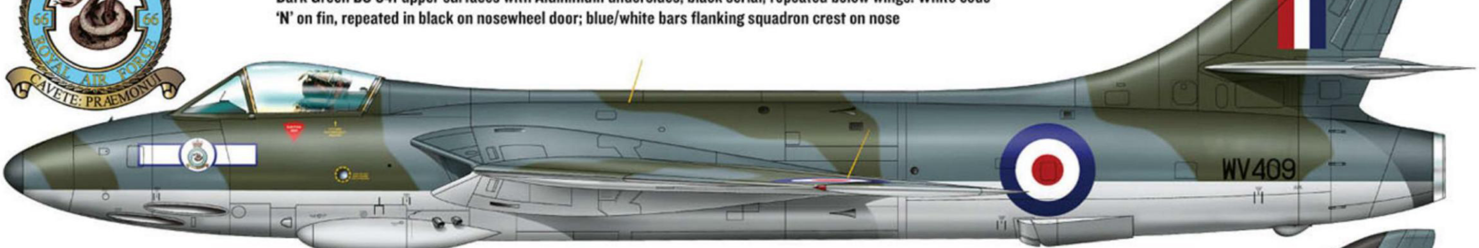




Hawker Hunter F Mk 4, XF990/K, flown by Wing Commander Flying, No.3 Squadron, RAF Geilenkirchen (Germany), May 1957. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serial, repeated below wings. Green bars, outlined in yellow, flanking fuselage roundel; Green code 'K' outlined in yellow on fin, repeated in black on nosewheel door. Rank pennant on nose with Nos.2, 3 and 234 Squadrons bars



Hawker Hunter F Mk 4, WV409/N, No.66 Squadron, RAF Linton-on-Ouse, March 1956. Dark Sea Grey BS 638/ Dark Green BS 641 upper surfaces with Aluminium undersides; black serial, repeated below wings. White code 'N' on fin, repeated in black on nosewheel door; blue/white bars flanking squadron crest on nose

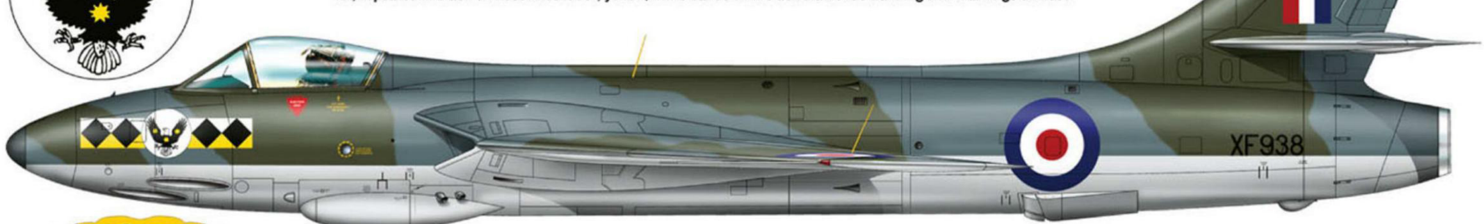


Hawker Hunter F Mk 4, XF317/U, No.67 Squadron, Bruggen (RAF Germany), early 1957. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serials, repeated below wings. Light Blue code 'U' on fin, repeated on nosewheel door; red/blue/yellow bars flanking fuselage roundels

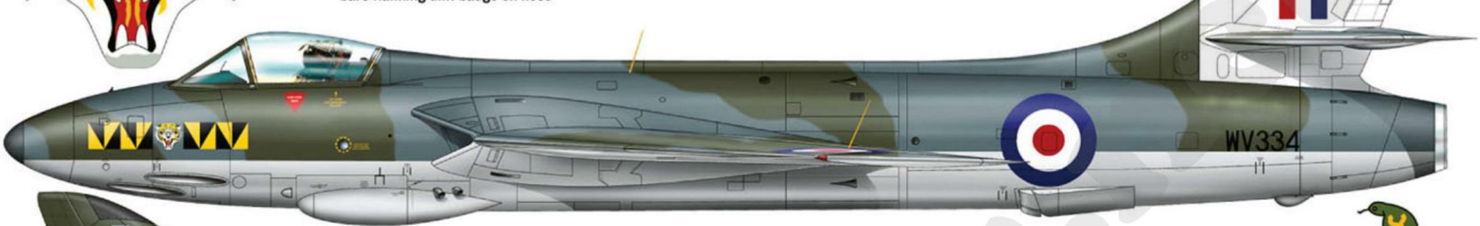
Hawker Hunter F Mk 4, XF313/G, No.71 Squadron, Bruggen (RAF Germany), 1956. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; serials in black, repeated below wings. Yellow code on fin, repeated in black on nosewheel door; white/yellow bars with black diamonds, flanking fuselage roundels

SCALE: 1/72

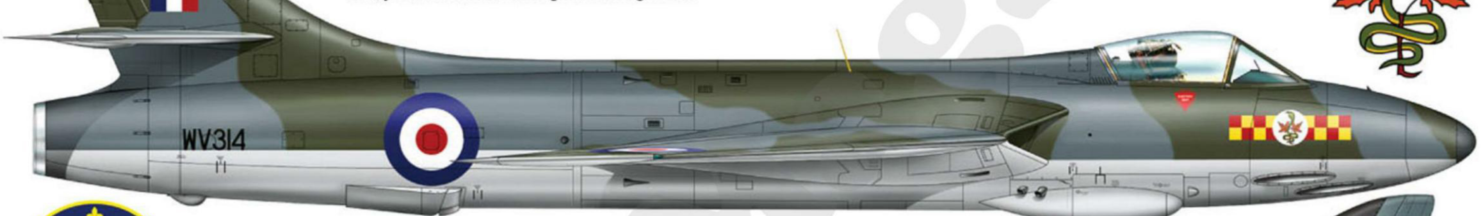
Hawker Hunter F Mk 4, XF938/D, No 71 Squadron, Bruggen (RAF Germany), 1957. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serials, repeated below wings. White code 'D' on fin, repeated in black on nosewheel door; yellow/white bands with black diamonds flanking unit markings on nose



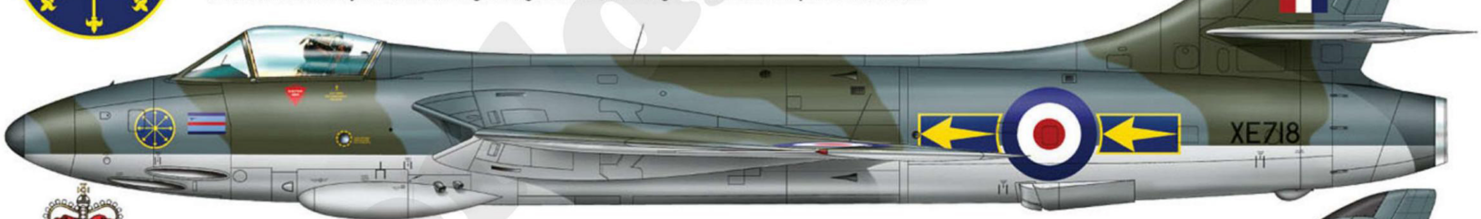
Hawker Hunter F Mk 4, WV334/E, No 74 Squadron, RAF Horsham St Faith, May 1957. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serials, repeated below wings. Yellow code 'E' on fin repeated in black on nosewheel door; white vertical tail surfaces (Exercise Vigilant, 25-27 May 1957). Yellow/black bars flanking unit badge on nose



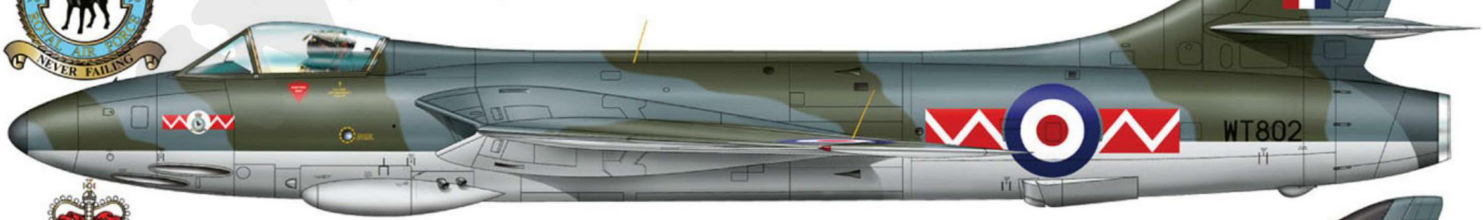
Hawker Hunter F Mk 4, WV314/B, No 92 Squadron, RAF Linton-on-Ouse, early 1957. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serials, repeated below wings. Light Grey code 'B' on fin, repeated in black on nosewheel door; yellow/red checks flanking unit marking on nose



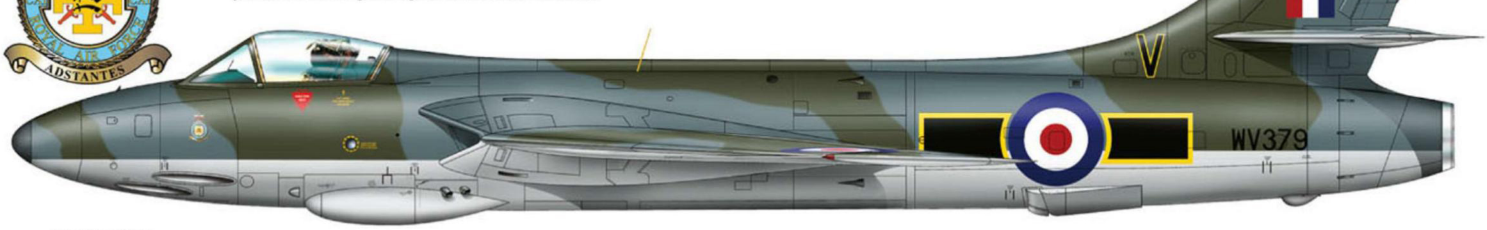
Hawker Hunter F Mk 4, XE718/A, flown by the Squadron Commander, No 93 Squadron, Jever (RAF Germany), 1956. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serials repeated below wings. Yellow code 'A' on fin, repeated in black on nosewheel door. Blue/yellow bars flanking fuselage roundels; unit badge on nose with rank pennant further aft



Hawker Hunter F Mk 4, WT802/P, No 98 Squadron, Jever (RAF Germany), 1956. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serial repeated below wings. White code letter, repeated on red nosewheel door; red/white bars flanking fuselage roundels, repeated on nose flanking unit crest



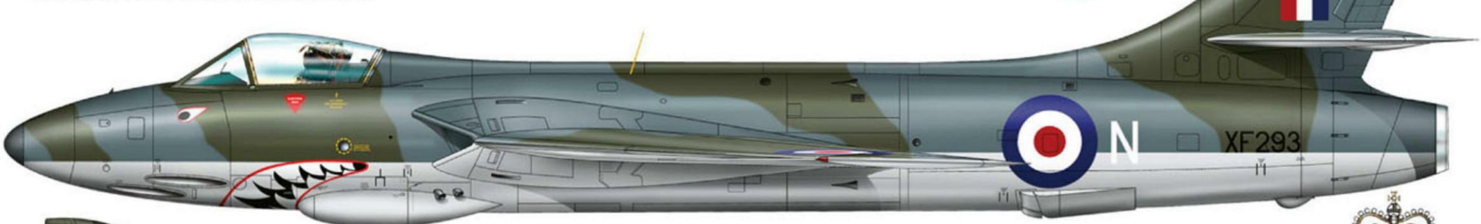
Hawker Hunter F Mk 4, WV379/V, No 111 Squadron, RAF North Weald, 1956. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serials, repeated below wings. Black code 'V', outlined in yellow, repeated on nosewheel door; black/yellow bars flanking fuselage roundel. Unit crest on nose



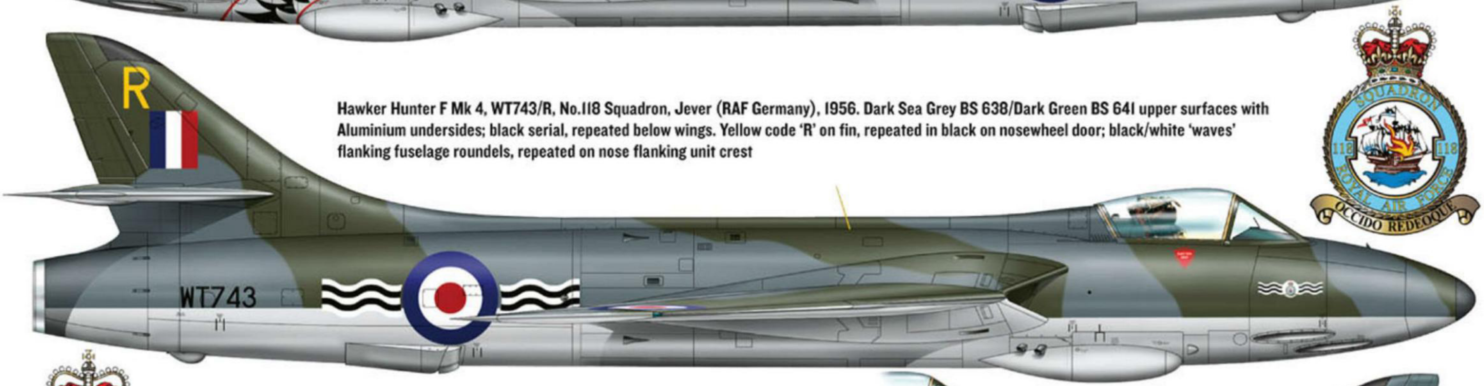
SCALE: 1/72

Model AIRPLANE INTERNATIONAL Original Artwork by Richard J. Caruana © MAI 2011

Hawker Hunter F Mk 4, XF293/N, No.112 Squadron, Brüggen (RAF Germany), 1956. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serial, repeated below wings. White code 'N' aft of roundels, repeated in red on nosewheel door; black/white 'sharkmouth' motif, outlined in red



Hawker Hunter F Mk 4, WT743/R, No.118 Squadron, Jever (RAF Germany), 1956. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serial, repeated below wings. Yellow code 'R' on fin, repeated in black on nosewheel door; black/white 'waves' flanking fuselage roundels, repeated on nose flanking unit crest

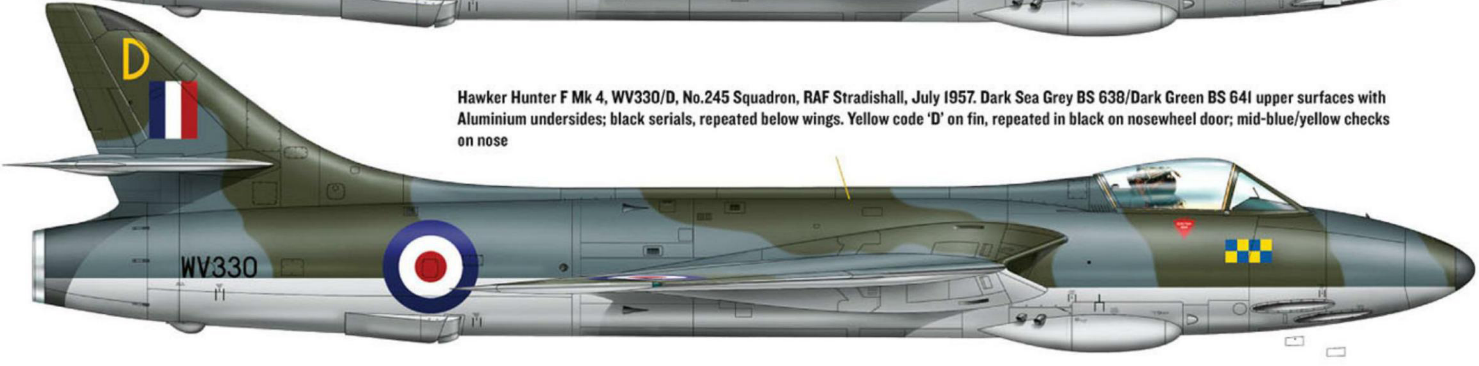


Hawker Hunter F Mk 4, XF294/B, No.130 Squadron, Bruggen (RAF Germany), 1956. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serials, repeated below wings. White code 'B' on fin, within a black disk, outlined in white and repeated in black on nosewheel door; red/blue/white bars flanking unit badge on nose (note that the elephant head is not handed on the starboard side)

Hawker Hunter F Mk 4, WV363/K, No.234 Squadron, Geilenkirchen (RAF Germany), 1956. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serial, repeated below wings. White code 'K' on fin, repeated in black on nosewheel door; black bars with red diamonds flanking unit badge on nose

Hawker Hunter F Mk 4, XF972/5, No.229 Operational Conversion Unit (145 Squadron), RAF Chivenor, 1961. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serials, repeated below wings. White code '5' on fin, repeated on nosewheel door; white bars with red crosses flanking fuselage roundels. White wingtips; note gun deflectors fitted

Hawker Hunter F Mk 4, WV330/D, No.245 Squadron, RAF Stradishall, July 1957. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serials, repeated below wings. Yellow code 'D' on fin, repeated in black on nosewheel door; mid-blue/yellow checks on nose



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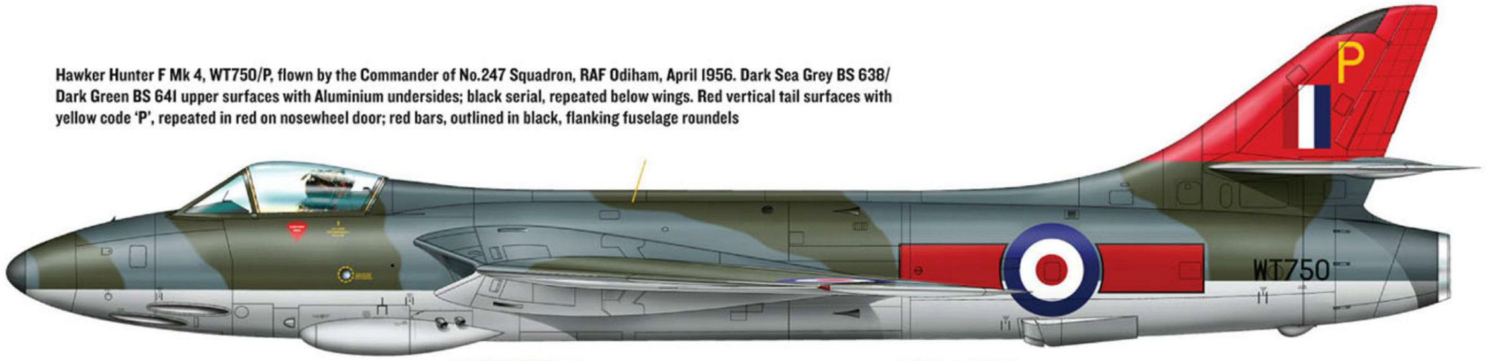
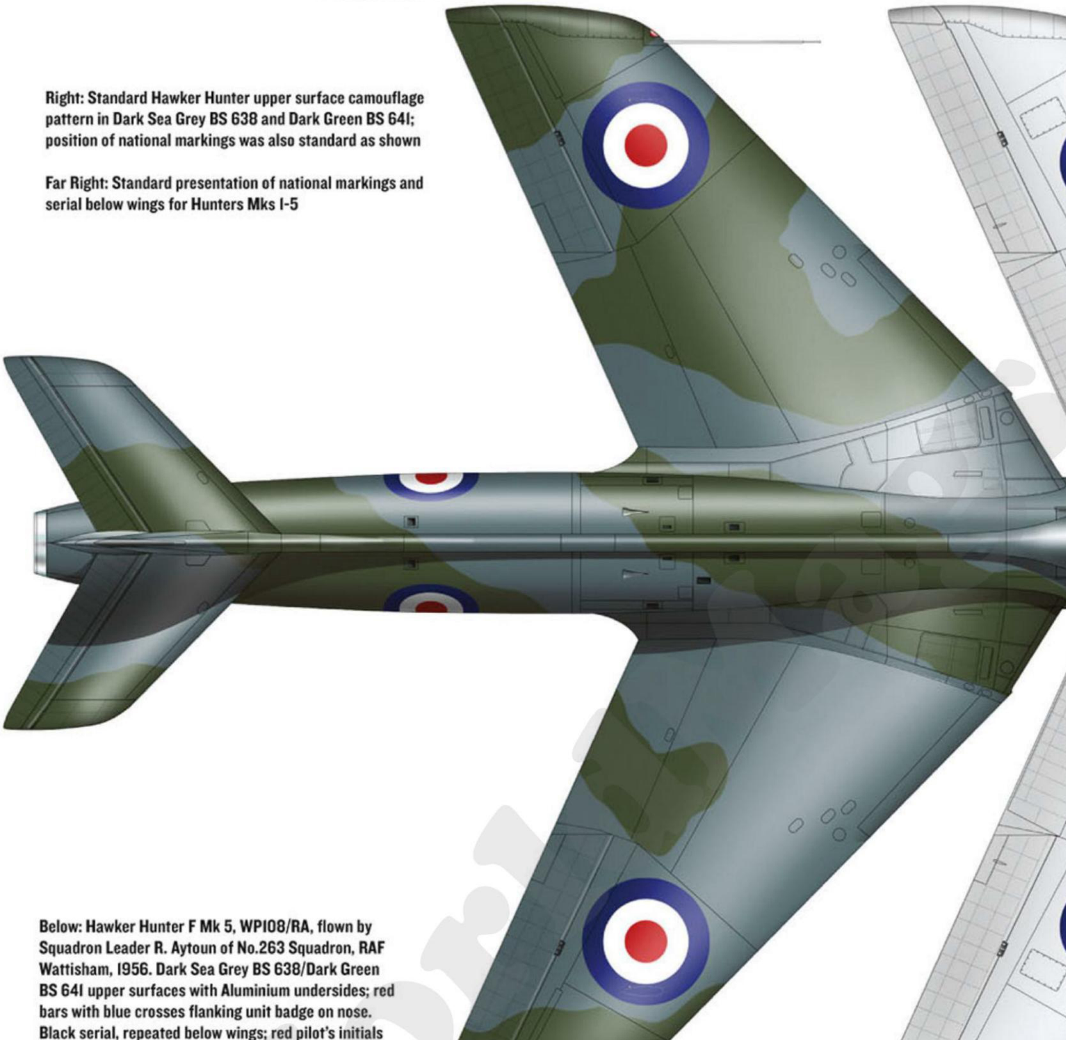
Hawker Hunter F Mk 4, WT750/P, flown by the Commander of No.247 Squadron, RAF Odiham, April 1956. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serial, repeated below wings. Red vertical tail surfaces with yellow code 'P', repeated in red on nosewheel door; red bars, outlined in black, flanking fuselage roundels

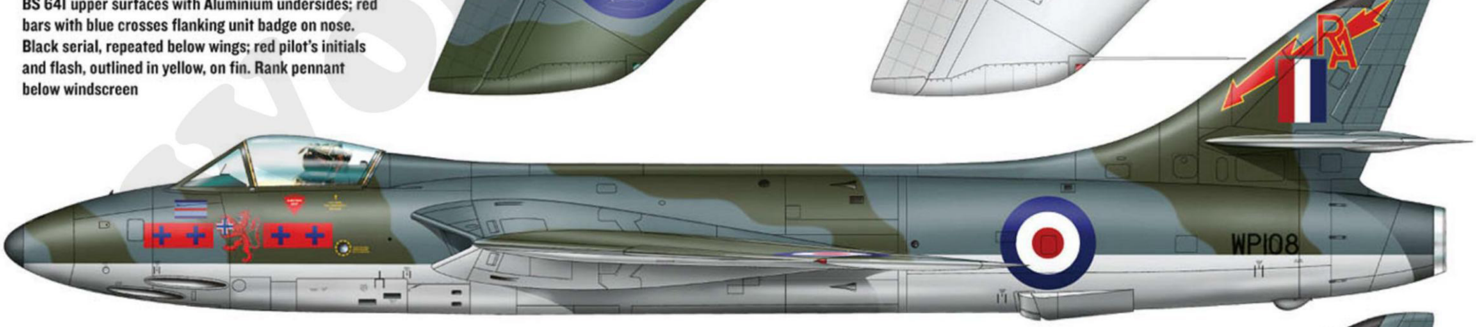


Right: Standard Hawker Hunter upper surface camouflage pattern in Dark Sea Grey BS 638 and Dark Green BS 641; position of national markings was also standard as shown

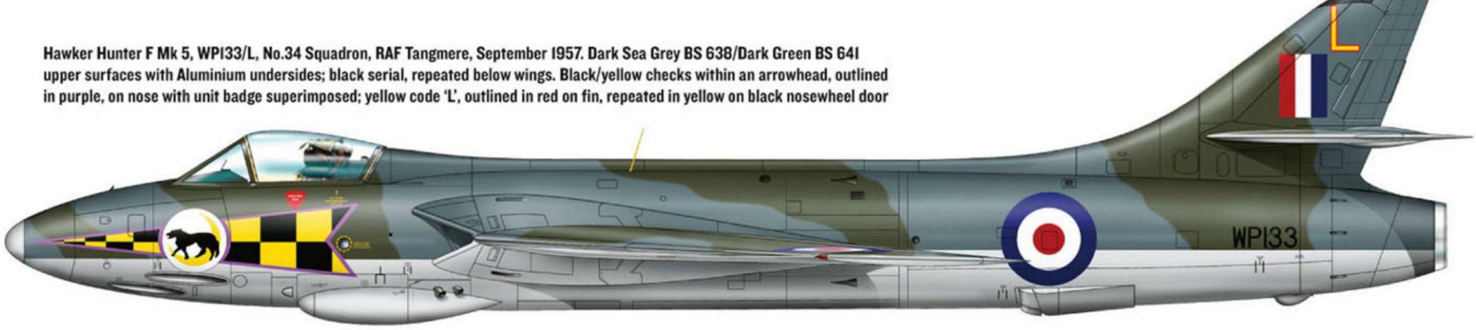


Far Right: Standard presentation of national markings and serial below wings for Hunters Mks I-5

Below: Hawker Hunter F Mk 5, WP108/RA, flown by Squadron Leader R. Aytoun of No.263 Squadron, RAF Wattisham, 1956. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; red bars with blue crosses flanking unit badge on nose. Black serial, repeated below wings; red pilot's initials and flash, outlined in yellow, on fin. Rank pennant below windscreen



Hawker Hunter F Mk 5, WP133/L, No.34 Squadron, RAF Tangmere, September 1957. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serial, repeated below wings. Black/yellow checks within an arrowhead, outlined in purple, on nose with unit badge superimposed; yellow code 'L', outlined in red on fin, repeated in yellow on black nosewheel door



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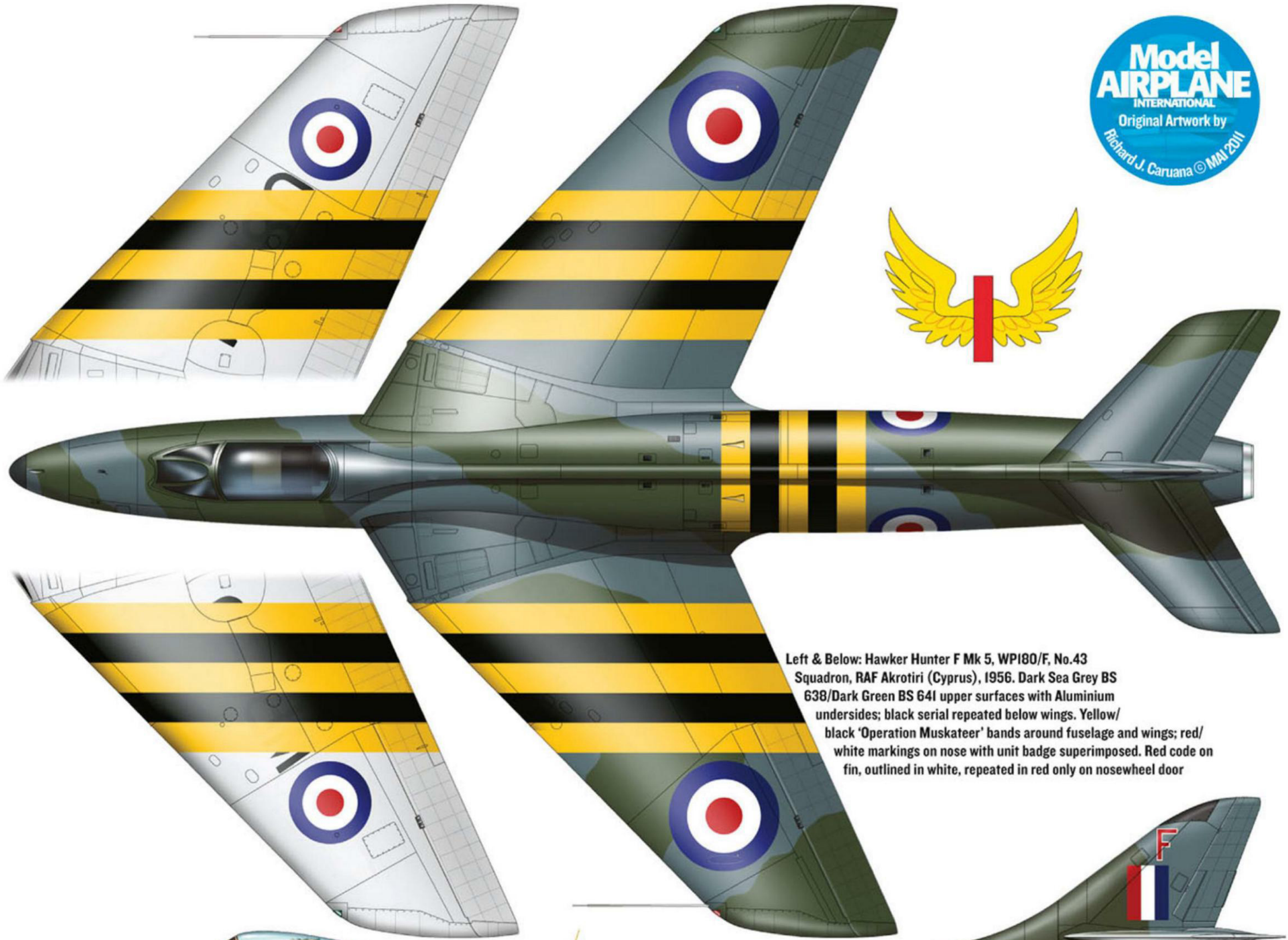
Hawker Hunter F Mk 5, WN966/M, No.41 Squadron, RAF Biggin Hill, 1955. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serials, repeated below wings. Red/white bars flanking unit badge on nose; red code 'M' on fin, repeated on nosewheel door



Left & Below: Hawker Hunter F Mk 5, WP180/F, No.43 Squadron, RAF Akrotiri (Cyprus), 1956. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serial repeated below wings. Yellow/black 'Operation Muskateer' bands around fuselage and wings; red/white markings on nose with unit badge superimposed. Red code on fin, outlined in white, repeated in red only on nosewheel door

Hawker Hunter F Mk 5, WP123/B, No.56 Squadron, RA Wattisham, 1957. Dark Sea Grey BS 638/Dark Green BS 641 upper surfaces with Aluminium undersides; black serials, repeated below wings. Red/white checks on a blue bar on nose with the unit badge superimposed; white code 'B', repeated in red on nosewheel door. Red/white checks on wingtips

SCALE: 1/72